Message from the Editor-in-Chief

The concept called ‘globalization’ has important effects education. We can give distance education as an example. You can live in Africa but join a lecture in a course in Great Britain. Furthermore, there is ease of access. Students can benefit from a course given with a different approach in another country. You, too, can carry out an experiment in a different country, make research and contribute to the education in that country.

Ways to reach information and to gain knowledge have also changed. Just as information is not limited to the classroom, the information you posses is not absolute, for the student can read, on the internet, an assertion which is the exact opposite of what you assert.

The term, “teaching” has been subordinated by the term “learning in education in the present-day world” as the point at issue is the student’s “learning” and “constructing knowledge”. Education is no more a product but a process.

Curricula and educational systems are being affected by the developments in educational sciences and technologies. Curricula are changing, and educational systems are constantly being renewed in order to keep pace with the global era. The effects of globalization on education had encouraged us to publish the first issue of our journal. Today, I am very happy to be able to share with you the second issue the International Journal of Global Education. I hope that this issue will also be of great use to academics

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CORRELATION BETWEEN ELEMENTARY STUDENTS’ READING ATTITUDES AND THEIR WRITING DISPOSITIONS

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ABSTRACT
The purpose of this study was to examine the correlation between elementary students’ reading attitudes and their writing dispositions and to determine to what extent students’ reading attitudes predict their writing dispositions. Four hundred and fifteen students from six elementary schools in Nigde, Turkey participated in the study. Students were chosen randomly. In this study, the Reading Attitudes and Writing Dispositions scales were used in order to collect data to answer the research questions. The correlative investigation model was adopted in the research. The Pearson moment’s correlation coefficient analysis showed that there was a positive significant correlation between students’ reading attitudes and their writing dispositions. It was also found that students’ reading attitudes were a significant predictor of their writing dispositions.

Keywords: Reading attitude, writing disposition, elementary education, and correlation.

INTRODUCTION
Language teaching is considered as a whole with some skills and encompasses activities that are directed towards improving students’ cognitive, affective, and kinaesthetic characteristics (Sever, 2004). So, the purpose in first language (L1) teaching in elementary schools is to ensure that language skills (listening, writing, speaking and writing) are used in the most affective and competent manner (Aslan, 2007). The most important element in order to make students gain these language skills at school is the curriculum (Demirel, 2003).

Reading comprehension level of Turkish students was found to be under international standards in examinations carried out in international arenas such as the PIRLS (MEB, 2003). Because of this academic failure of Turkish students in international examinations, the Turkish Education System has been revised and the elementary and high school curricula have been renewed under the light of international educational progresses in order to develop students’ academic skills such as writing and reading. Thus, the Ministry of National Education, known as MEB developed a new elementary curriculum in order to educate students to make them gain necessary language skills in courses such as Turkish, social sciences, foreign languages, etc. This new elementary curriculum especially focused on the development of students’ writing and reading skills in an integrated manner to make students individuals who both read and write in their daily lives.

According to Allen & Bruton (1998), reading is complex process of making meaning from a text, for variety of purposes and in a wide range of contexts. Reading is a psycholinguistic process in that it starts with a linguistic surface representation encoded by a writer and ends with meaning which the reader constructs (Goodman, 1995). In this sense, as Keçik & Uzun (2004) state that in communication based on language, neither sounds and words nor sentences take on a table by themselves and that the basic unit of linguistic communication is texts and that individuals use texts in communication with one another. For this purpose, developing language skills not only requires
mastering on reading, but also it requires individuals to write effectively on what they read. Therefore, care must be given for the development of writing skills as well as reading skills in a curriculum. In this regard, Özbay (2007) defines writing as the expression of emotions, thoughts, wants, needs and events according to certain symbols based on certain rules by pointing out that the act of writing is necessary.

Although reading is a receptive and writing is a productive language skill (Demirel, 2003; Özbay, 2007), it is stated that there is a strong correlation between these two language skills in the related literature. Reading and writing are inseparable skills for language teaching. Reading and writing skills cannot be separated from one another just as listening and speaking skills. For example, Carson (1990) examined this issue and convincingly showed that reading influences writing, that writing influences reading, and that they interactively influence one another. As individuals begin to read, they get information and create a personal understanding based on what he/she read, and then they tend to put down their understanding as a written form. In other words, individuals receive information from reading and they put down what they think, know and understand by writing. However, individuals must start reading first by having positive attitudes towards reading. According to Kush, Marley & Brookhart (2005), students’ attitudes towards reading are the leading factor that directly affects their reading comprehension and productive skill such as writing. Therefore, it has been determined that students who have positive attitudes towards reading tend to write on what they read.

When the related literature is viewed, it can be seen that there are some studies both on reading attitudes (Keleş, 2006; Topçu, 2007; Balci, 2009; Ünal, 2010) and writing dispositions (Bağcı, 2007; Arıcı & Ungan, 2008; İşeri, 2010; Ünal, 2010) of students in the Turkish Education System. However, the number of the studies on the correlation between reading attitudes and writing dispositions of students is very few and they all focused on the correlation between reading and writing skills, not on their reading attitudes and writing dispositions. Because of this, further studies on this very issue are needed to be carried out in order to create a more effective curriculum regarding reading and writing in an integrated manner at elementary school. Hence, the purpose of this research can be stated to investigate the correlation between elementary students’ reading attitudes and their writing dispositions. In order to establish a correlation between reading attitudes and writing dispositions, the following questions were posed in the study:

1. Is there a significant correlation between students’ reading attitudes and writing dispositions?
2. What is the predictive level of students’ reading attitudes for their writing dispositions?

**METHODOLOGY**

The correlative investigation model was used in the research (McMillan & Schumacher, 2006). This model is one of the most commonly applied models in the related literature (Cohen et al., 2003). The correlative investigation model is used to determine the correlation between different variables in educational and social research (Fraenkel & Wallen, 2000) and aims to identify the existence or level of coordinated change between two or more variables (McMillan & Schumacher, 2006).
Participants

The population of this study consisted of students in elementary schools during the 2011-2012 academic year within the borders of Nigde province. In order to detect the sampling of the study, from elementary schools in cosmos, 415 students from six public elementary schools were chosen according to random sampling method (Karasar, 2005). In order to detect the sampling of the study, elementary schools in cosmos were chosen according to three-layer group sampling method according to socio-economic structure (high-middle-low) of their region, volunteered to participate in the research (McMillan & Schumacher, 2006). The participants were assured for the anonymity and confidentiality for their responses in the study. Of the total, 223 (%53.74) of the students were females and 192 (%46.26) of the students were males.

Instruments

In order to answer the research questions in the study, “the Reading Attitude Scale” (Ünal, 2006) and “the Writing Dispositions Scale” (Piazza & Siebert, 2008) were used in the study. The information for these scales is given below.

The Reading Attitude Scale

In this study, “the Reading Attitude Scale”, developed by Ünal (2006) was used in order to collect data to answer the research questions. The scale consists of 25 items with a five-likert type. The Cronbach’s Alpha coefficient of the scale was calculated as .90. The higher the total score on the scale, the higher the level of attitudes towards reading of students.

The Writing Dispositions Scale

In this study, “the Writing Dispositions Scale”, developed by Piazza & Siebert (2008) and adapted into Turkish by İşeri & Ünal (2010) was used in order to collect data to answer the research questions. The scale consists of 21 items with a five-likert type. The Cronbach’s Alpha coefficient of the scale was calculated as .89. The higher the total score on the scale, the higher the level of writing dispositions of students.

Data Analysis

The Pearson moment’s correlation coefficient analysis was used to determine the correlation between variables and the regression analysis to determine the prediction level of students’ reading attitudes for their writing dispositions.

FINDINGS

In this part of the research, the correlation between students’ reading attitudes and their writing dispositions and the prediction level of students’ reading attitudes for students’ writing dispositions were presented. Thus, the first sub-question of the research was “Is there a significant correlation between students’ reading attitudes and writing dispositions?” In order to answer this sub-question, the correlation coefficient analysis was conducted in the research. For this purpose, the correlation between students’ reading attitudes and their writing dispositions is presented in Table 1 below.
Table 1. Correlations matrix of reading attitudes for writing disposition

<table>
<thead>
<tr>
<th>Reading Attitudes</th>
<th>Writing Dispositions</th>
</tr>
</thead>
<tbody>
<tr>
<td>( r )</td>
<td>.730**</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

According to the finding of the research in relation to correlation between students’ reading attitudes and their writing dispositions, it was found out a significant positive high correlation between students’ reading attitudes and their writing dispositions \([r = .730, p < .01]\). As an increase in the total score on the reading attitudes scale represents a more positive attitudes towards reading, so it may be stated that an increase on the total score of the reading attitudes affects students’ writing dispositions positively. In the same way, it may also be suggested that the more positive attitudes students have towards reading, the more positive dispositions of students towards writing is observed. On the other hand, step-wise regression analysis was used in order to measure the prediction level of students’ reading attitudes for their writing dispositions and the result obtained in the study is presented in Table 2 below.

Table 2. Prediction of reading attitudes for writing dispositions

<table>
<thead>
<tr>
<th>B</th>
<th>Std. Error</th>
<th>( \beta )</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>19.825</td>
<td>4.304</td>
<td>4.607</td>
<td>.000</td>
</tr>
<tr>
<td>Writing Dispositions</td>
<td>1.132</td>
<td>.054</td>
<td>.730</td>
<td>21.121</td>
</tr>
</tbody>
</table>

Note: \( R = .730, R^2 = .532, F(1, 392) = 446.079, p = .000 \)

In terms of the regression analysis of students’ attitudes towards reading for their writing dispositions, it was found out that students’ reading attitudes were a significant predictor of students’ writing dispositions and approximately fifty four percent of the total variance for students’ writing dispositions was explained by their reading attitudes \([R = .730, R^2 = .532, p < .01]\). In the light of the data gathered, it can be stated that students’ reading attitudes appear to be a significant predictor for their dispositions on writing.

CONCLUSIONS AND DISCUSSION

It is believed that reading attitudes develop writing dispositions in the related literature. According to Stotsky (1983), better writers tend to read more than poorer writers do, and that better readers tend to produce more syntactically mature writing than poorer readers do. As the constructivist learning theory asserts that writing and reading are both meaning-making activities (Gregg & Steinberg, 1980). When people write and read, meaning is continually in a state of becoming. Thus, the more students read, the more they are acquainted with reading passages and the more they tend to write in the form of reading passages that they have studied and/or read. In this sense, according to the results obtained in the research, it was found out that there was a significant positive high correlation \([r = .730, p < .01]\) between students’ attitudes towards reading and their writing dispositions. In studies carried out by Goodman & Goodman (1983), Stotsky (1983) and Carrel, Devine & Eskey (1988), it was found out a strong correlation between students’ reading and their writing skills. Similarly, Loban (1963) in his longitudinal study of students’ reading and writing development indicated strong correlation between reading and writing skills. As Loban (1963)
stated, students who wrote more well also read well, and that the converse was true. Further, these correlations become even more pronounced across the school grades. The results obtained from the related literature are paralleled to the related finding in relation to correlation between reading attitudes and writing dispositions of this research. Hence, it can be stated in the light of the finding in the research, the more input the students are exposed to reading, the more positive transfer into their writing performance results.

On the other hand, in terms of the regression analysis result of reading attitudes for writing dispositions, it was found out that students’ reading attitudes were a significant predictor \( R^2 = .730, p<.01 \) for their writing dispositions. So, it can be stated that reading and writing are integrated language skills and reading attitudes affect student’s writing dispositions positively. Students’ positive reading attitudes can lead them to reading, thus they can be intended to write on what they read and thought. In this regard, Krashen (1993) stressed the importance of reading as a means of language acquisition and writing development. Therefore, it is possible to see that the more students read, the more they are acquainted with reading passages and books and the more they intend to write in the form of reading passages and books they have read and/or studied. Shanahan (1984) also found out that reading and writing affect one another since they both share structural components that can be acquired in one domain and then applied in the other. As Chall & Jacobs (1983) suggested that reading and writing were strongly correlated and these two domains had an impact upon one another, with implications for enhancing learning.

As a result of this research, it can be recommended that instruction should be held with reading and writing in support for each other in order to develop students’ reading attitudes then make them write on what they read and think. It can also be recommended that the correlation amongst reading attitudes, writing dispositions and other skills of language such as speaking and listening are analysed in other level or grade of education.

REFERENCES


AN ANALYSIS OF THE MANAGEMENT OF THE NAMIBIAN INFORMATION COMMUNICATION TECHNOLOGY SCHOOL CURRICULUM PLANNING

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ABSTRACT
The Namibian Educational sector acknowledges the impact that technology bears in education, however, ICTs have not been thoroughly immersed in classroom practice. A policy document which purports for the preparation of all Namibia’s learners, students, teachers, and communities was drafted but its implementation has not provided much fruition. The chief tenet of this article is that proper planning, organisation, supervision and communication leads to proper implementation of policies. If the Namibian education sector is to achieve the above, significant improvement in immersing ICTs in the classroom would be achieved. The paper begins with a discussion of the current status quo of ICT in the Namibian education sector. Then, it explores the importance of thorough planning, organisation, supervision and communication of the implementation of the ICT curriculum in the Namibian education sector.

Keywords: management, communication technology, Namibian

INTRODUCTION
Namibia, like many other developing countries is working towards economic emancipation and this can only be achieved by identifying education as a driving force in this developmental endeavour; therefore it was found fitting that education should take a pivotal role as it is ‘the foundation of all knowledge’. In order for the education sector to play an effectively role; it identified ICT as one of the tools that could be utilized to enhance teaching in primary, secondary and tertiary institutions. With the advent of ICT, it is hoped that schools would benefit greatly if technologies are optimally utilised. The principal analysis is that proper planning, organisation, supervision and communication leads to proper implementation of policies. If the Namibian education sector is to achieve the above, there should be significant ICT improvement implementation. The paper begins with background information about ICTs in the Namibian educational sector; explains the current status quo of ICTs in the sector. Then, it analyses the importance of thorough planning, organisation, supervision and communication of the implementation of the ICT curriculum in the Namibian education sector. This is followed by recommendations or suggestions on the management of the Namibian ICT School Curriculum planning.

BACKGROUND INFORMATION
The Economic Commission for Africa (ECA)’s policy document on National Information and Communication Infrastructures (NICI) set the following guidelines to be addressed by African countries:
Providing equitable remote access to resources in support of both distance education and the strengthening of local educational capacity; connecting schools, universities and research centres to national and international distance education facilities, national and international databases, libraries, research laboratories and computing facilities; reducing communications and administrative costs by building communications networks linking all educational establishments; promoting and supporting collaboration among teachers and researchers; extending the reach of educational facilities in informal learning.

In response to the regional guidelines, the Namibian government crafted the road map which is Vision 2030, in which the use of ICT is clearly spelt out. Vision 2030 incites the use of ICTs in all sectors of development in the country in order for Namibians to be productive in a knowledge based economy. According to Office of the president (2004, p.77),

Advanced micro-electronics-based Information and Communication Technologies ICT’s) are at the heart of recent social and economic transformations in the industrialized and much of the developing world. These technologies are now being applied to all sectors of the economy and society... Greater use of ICT’s opens up new opportunities for Namibia and other developing countries to harness these technologies and services to meet their developmental goals.

At the inception of the ETSIP and ICT policy documents, the two ministers of Education echoed the sentiments of Office of the President and said “as we move towards a knowledge–based development paradigm, as stipulated in Namibia’s Vision 2030 ‘Integrating ICT education and training into education and training system’ issues of access to the local and global pool of knowledge and information become paramount” (GRN, 2001, p. i). It can be inferred that the main objective of ICT integration as a tool across curriculum in Namibian schools is to promote the most effective use of technology to enhance teaching. The national authorities recognize the need for the integration of ICT into school curriculum delivery. ICT standards have been produced, developed and published directly relating to curriculum standards. The education sector saw it befitting to implement a policy in support of ICT integration in schools. In support of vision 2030 the Ministry of Education embarked on drafting an ICT policy for the education sector. Ministry of Education, Sports and Culture (MBESC) and the Ministry of Higher Education Training and Employment Creation (MHETEC)(2004), define ICT as a generic term that encompasses: computers, audio visual systems, broadcast receiving systems, telecommunication systems, compact discs, video discs, microcomputer-based laboratories, the internet, virtual learning centres, local and wide area networks, instructional software, printed media, educational television, voice mail, e-mail, satellite communication, VCRs, cable television, conventional and interactive radio. For the purpose of this paper ICT is defined as all technologies used in handling and communication of information and their use specifically in education.

According to the MBESC and the MHETEC (2004), ICT assists in the delivery of equitable and quality education; this would thus increase productivity and accelerate economic development. It seems as though empowering learners to engage in meaningful, challenging and enlightening tasks is the main aim of the Ministry of education. The mission of the Namibian ICT policy for Education, according to Republic of Namibia (2005), is to pronounce the relevance, responsibility, and effectiveness of integrating ICT in education with a view of meeting the challenges of the 21st century. To this end, the policy draws on worldwide knowledge and experience to describe and realise the possibilities of ICT for education, constrains for turning this potential into effectiveness and scenarios of applying these capacities in different environments.“The purpose of this policy is
to prepare all Namibian learners, students, teachers, and communities of today for the world economy of tomorrow” (GRN, 2005 p.7). It appears as though ICT will be rapidly integrated throughout the education sector to enhance learning and administration. The curriculum will be revised to make ICT a cross curricular tool as well as a subject. According to Republic of Namibia (2005), staff will be trained and ICT services and support structures developed, so that technology can be deployed and maintained. According to the MBESC and the MHETEC (2004) the overall goals of this policy are as follow:

Produce ICT literate citizens; produce people capable of working and participating in the new economies and societies arising from ICT and related developments; leverage ICT to assist and facilitate learning for the benefit of all learners and teachers across the curriculum; improve the efficiency of educational administration and management at every level from the classroom, school library, through the school and on to the sector as a whole; broaden quality educational services for learners at all levels of the education system; and to set specific criteria and targets to help classify and categorise the different development levels of using ICT in education.

These are very broad and complex goals that need unconditional commitment from all stakeholders in order to achieve them. All stakeholders in this venture need to devote their energies and resources if ICT integration in Namibian schools is to be realised by the year 2030. According to the MBESC and the MHETEC (2004) there are three aspects to the role of ICT in the curriculum: Firstly, ICT skills and knowledge, secondly, ICT as a curriculum subject and thirdly, the usage of ICT as a cross curricular tool. With this last aspect, the Ministry of Education intends to implement a guidance document on the general use of ICT in all curriculum activities. Individual subjects curriculum will also be adjusted to reflect the role of ICT in teaching the subjects. The cause of poor school improvement program implementation in Namibia has necessitated this evaluation of the management of the Namibian school curriculum planning. Since mere development of a new ICT school curriculum policy, does not necessarily guarantee an improvement in the country’s education system. As Fullan (2001, pp. 71-75) highlights several factors at play. These include the involvement of local role players such as teachers, school principals and district officials, as well as the contribution of external role players, such as the national and provincial governments, other organizations and consultants. Yet proper implementation of curriculum does depend on stakeholders only but on planning, organization, supervision and communication.

ICT CURRICULUM CURRENT STATUS QUO NAMIBIA

A comprehensive ICT policy was officiated in 2006 and in 2006, another official document; ICTs in Education Implementation Guide Plan was compiled by the Ministry of Education. These documents were meant to spearhead and guide the integration of ICTs in the education Sector. Besides the drafting of the above documents, several agencies are and were in support of this move of the Republic of Namibia. Extending wires and cables in ICT integration is deemed critical in the journey towards full integration of ICT in schools, these are the initiatives of dot-EDU in Namibia. Dot CoMments (2007) claim that since 2001, USAID has supported three successive initiatives related to the integration of information technology in education in Namibia: the Computer Assisted Teacher Trainer Activity (CATT), under the LearnLink program, and more recently; the Initiative for Namibian Education Technology (iNET), under dot-EDU; and The Alliance to Promote Information and Communication Technologies in Namibian Schools, under dot-EDU as well. As a whole, according to Dot CoMments, these three initiatives have provided teachers and Primary Teachers’ College (PTC) instructors with the on-going human, technical and
Curricular support necessary to help teachers effectively use and integrate ICT into instruction. However, these teachers require on-going support in integrating ICT in the instruction delivery. Dot-CoMment (2007) further postulates that initiatives such as LearnLink’s CATT and iNET realised early on the importance of this regular follow-up support. In addition to face-to-face and online professional development, pre-service teacher educators in Namibia’s four primary teachers’ colleges also had on-going access to an online coach and site visits from iNET facilitators, who assisted these pre-service teacher instructors in using ICTs to deepen content, curriculum, and instruction in meaningful ways. But, the human support did not end there.

Moreover, Dot-CoMment (2007) points out that through partnerships with organizations such as the International Foundation for Education and Self-Help (IFESH) PTC instructors received regular ongoing technology training, troubleshooting and integration help from local IFESH volunteers. And through the creation of local Teacher Resource Centres (TRCs) by the Namibian Ministry of Education, staffed with a full-time resource person, PTC instructors, as well as primary and secondary school teachers, can now enhance their acquired technical skills with assistance from a TRC support person.

The National Institute of Educational Development (NIED), with assistance from dot-EDU, created the Educational Development and Support Network (EdsNet), an online repository of curricular and content materials, syllabi, readings, and resources. This gateway, created by Namibian educators for Namibian educators, is available in English and in some Namibian primary local languages. It seems that iNET has been of great assistance in the integration of ICT in the Namibian education sector, therefore the efforts of this agency are briefly viewed below. According to Republic of Namibia (2005) there have already been initiatives to integrate ICT in school curricular, these include: the Polytechnic of Namibia and the University of Namibia which offer courses online and SchoolINet which offers an indigenous infrastructural solution to schools including the provision of affordable 24/7 internet access. Another initiative is the initiative for Namibian Education Technology (iNET). “iNET supported MBESC in the establishment of physical, online, and human resources within the ministry, as well as policy development in relation to ICT, education, and training” (The initiative for Namibian Education Technology (iNET), 2006). This initiative began in 2003-2006. It seems that it somewhat managed to assist the education sector with training some teachers and teacher educators in the implementation of ICT as a cross curriculum tool. The iNET report (2006) claims that iNET undertook training activities with college faculties, education planners, and teacher resource centre staff since June 2004. The report postulates that iNET has provided more technology to schools and that it made a significant contribution in assisting the Ministry of Education in developing a national ICT and education strategy and strategy implementation plan. However, according to the report, the project encountered obstacles in implementing its plans effectively. These include: a weak Namibian dollar, delays in the ministry’s rollout of equipment to colleges of education and ministry’s difficulties in filling counterpart posts for the project. Furthermore, according to the report, the iNET project ramped up its activities related to the online course with Harvard Graduate School of Education. Fifteen additional participants undertook the course “Teaching to Standards with New Technology”. In addition, three Ministry colleagues began serving as "coaches in training", which will eventually allow them to be coaches on future Harvard courses.

The project is said to have moved forward with a relationship with a second university, this time Wayne Patterson University in New Jersey. This relationship had student teachers in New Jersey and Namibia (3 students) taking an online course together. The Wayne Patterson professor and the iNET Chief of Party co-wrote and published an article on technology and education in Namibia.
Furthermore, the report claims that connectivity has now been established at all four colleges of education and the project's work to support the development of a technology in education policy for Namibia has been concluded with the draft policy being delivered to the then Ministers (Nahas Angula and John Mutorwa) of education for consideration by cabinet. Finally, the Technology Across the iNET report (2003) explains that the Curriculum course was completed by 4 student teachers. 100% pass rate was achieved. The Teaching to Standards with New Technology (Harvard) was completed by 15 Namibian participants and 3 NIED apprentice coaches. The ICT Policy for Education was finalised. It seems that Namibia, with the assistance of this external agency is on the right track on ICT integration. With this kind of assistance maybe this goal of Vision 2030 might be realised.

SchoolNet Namibia was a local hands-on ICT deployment, training and support organization, established in February 2000 to empower youth through the Internet and provide sustainable low-cost technology solution for Internet to all Namibian schools. SchoolNet Namibia was officially dissolved by its Trustees and membership at a general meeting on 17 July 2009. According to Dot-CoMment (2007) through the efforts of SchoolNet Namibia, one of the more innovative and successful SchoolNet programs in Africa, the Alliance to Promote Information and Communication Technologies in Namibian Schools tackled this issue of technical support from both a demand and supply perspective. First, it attempted to reduce the demand for technical support by providing a thin client, open source-based approach to partner schools. Since all network and computer services are centralised, all maintenance and upgrading is done at the server—versus client— location. Since it is constantly improved upon by programmers, open source software is regarded by many as more technically stable, thus reducing the need for technical support. SchoolNet is also reported to have increased the supply of technical support by training 600 out-of-work youth—“Kids on the Block”—and placing many of them in the populated northern regions of the country to assist with technical support, trouble shooting and computer management responsibilities. This merge of human and technical networks according to Dot-CoMment (2007) offers teachers more support in their quest towards ICT integration and has done much to help distribute computers in some parts of the country and through the Namibian educational system. This was a setback for the effective and efficient ICT integration in Namibian schools.

PLANNING

The creation of curriculum requires appropriate and conscientious planning. According to Victoria state government, Department of Education and Early Childhood Development (2006) curriculum planning comprises of five stages which are: understanding the context; planning and resourcing, implementation; continuous monitoring and evaluation and review. When it comes to introducing ICTs in schools, or taking an existing process forward, planning is very important. Planning is important because if there is no integrated plan, properly agreed upon by interested stakeholders, then there is likely to be disagreement, dissension, and even disintegration, as various groups implement different plans, or do what they please, without any over-arching co-ordination or alignment to a broader vision. In agreement of the assertion are Earley and Bubb (2004) who advance that curriculum implementation plans are important as they create a common understanding among implementers of the required curriculum practices, as these plans become benchmarks for identifying obstacles and ways to overcome such obstacles during the implementation phase so as not to abandon the implementation as is the case in Namibian situation. In this subsection, the ICT school policy is analysed to ascertain if it has the following strategies plan in place: The inclusion of documents/frameworks in the basic curriculum components; and the inclusion of plan of action which indicates decision to be taken, planning tasks which need to be performed and who (including functional roles) will be involved in the planning will be carried out. The current situation in Namibia and maybe the world at large is of learner performance and their
ability to perform efficiently in a knowledge based economy; i.e. what they learn in school should be congruent with what will be required of them in the workplace. Therefore curriculum planners are naturally tasked with the planning of curriculum that would enable a Namibian learner to be highly effective citizens.

ORGANISATION

There is an urgent need to set up a system for the effective management of the ICT curriculum in the Namibian Education Sector. Middlewood (2003, pp. 66-68) assigns the primary responsibility of planning, managing and overseeing the curriculum implementation process to the School Management Team (SMT). To hold Namibian SMT accountable, the paper analyses the following: the establishment of decision-making, organizational and communication structures; the provision for democratic (participation/representation) participation of stakeholders in the planning process, identification of qualified persons in the planning structures and the compatibility of cost of planning with available resources. It cannot be denied that teachers, in particular, play a central role in the implementation of a school curriculum. Fullan (2001, p. 117) underscores the importance of the teacher as a central change agent, as the teacher is the one who is primarily responsible for the successful implementation of a new curriculum. However, teachers’ roles are at the micro level (classroom), therefore, involvement and commitment of those at the macro level and other factors are important. In concordance are Rogan and Grayson (2003, pp. 1172 – 1195) who add on that successful implementation is affected by the nature of the particular school’s physical and human resources, the quality of teacher and learner support, and in general, the ability of the school management teams (SMTs) to support the implementation process through proper planning and subsequent management of the implementation.

SUPERVISION

Supervision is an essential part of the curriculum management planning process. It refers to the effective procedures to collect and use information about progress of the planning, functioning of structures and performance of personnel, their needs and the provision of relevant training. It helps to modify plans and structures, to take remedial actions or to relocate personnel and put plans into action towards the accomplishment of curriculum goals. The success of a country’s curriculum committee depends upon effective supervision. The importance of communication cannot be denied. Since using effective communication skills is crucial to successful management of curriculum planning. Communication helps to assess whether there is effective and open communication channels to give and get feedback about the progress of the planning (in relation to a time schedule), the actual planning progress, and the various structures. It also helps to monitor if there is continuous refinement or revision of the action plan and structures being undertaken. Compact Oxford English Dictionary (2008) defines the verb implement as “to put a decision, plan, or agreement into effect” (p.507). Therefore for the purpose of this paper Curriculum implementation is the actual use of the ICT curriculum in classroom practice. All aspects of ICTs for education initiative, including ICTs purchased and installed, curricular and content developed, training conducted, provisions for user support, and maintenance and technical support, should all be driven by the overall educational objectives. Furthermore, it is imperative that continuous assessment and evaluation are conducted on all aspects of the initiative to ensure that educational objectives are being met (TECH/NA, 2006, p.15).
POSSIBLE CHALLENGES IN INTEGRATING AN EFFECTIVE ICT PROGRAMME IN NAMIBIAN SCHOOLS

According to the Office of the President (2004), Namibia lacks trained and skilled ICT human resources, thus the dependence on imported skills and technical knowledge. There is a lack of focus on ICT development by government, thus inadequate investment in this area. In the researcher’s view, there are several challenges that the Education sector should over-come before ICT is fully integrated into the sector. Amongst others, there seem to be a scarcity of resources, both physical and financial. These challenges could be the availability of energy resources (power supply) and services, teacher training in ICT, infrastructure and technological resources.

RECOMMENDATIONS

Teacher training should be an on-going process. It does not end upon the completion of a teacher training course or a workshop. In addition to this, teachers still need additional professional development that addresses integration of technology into the curriculum and that demonstrates how ICTs really do improve student learning. To do this, teachers will need access to long-term professional development that focuses on improving their knowledge and application of curricula, instruction and assessment not just computers. The education sector should see to it that funds are directed into improving and building classrooms in order to integrate ICT in schools as a cross curricular tool that enhances learning. According to Dot-CoMment (2007), classrooms need to be revamped in order to accommodate ICT equipment and resources. In addition to the above, Namibia should come up with alternative energy supply mechanisms that would assist in powering ICT resources. The above recommendations would culminate into an effective and efficient management of the Namibian ICT School Curriculum planning.

CONCLUSION

Once ICT becomes an integral part of student learning, teaching styles and classroom organisation cannot remain unchanged. Therefore, teachers should be guided on how to integrate ICT in their teaching activities. Furthermore, classrooms should be revamped in order to accommodate all peripherals that accompany ICTs. All stakeholders in the education sector should actively participate in this long-term strategy. ICT integration in the education sector is not an easy task therefore financial, human and physical resources should be invested in this venture. It is only through these efforts that by 2030, ICT might be fully integrated in the education sector. It is difficult for one to conclude that by 2030 every Namibian learner would have access to a computer, for the challenges that need to be overcome before this vision is realised are enormous if not complex. As alluded to in the “Introduction”, proper planning, organisation, supervision and communication leads to proper implementation of policies. If the Namibian education sector thoroughly works to achieve the above, significant improvement in immersing ICTs in the classroom would be achieved.

REFERENCES

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EXAMINING THE RELATION BETWEEN PROBLEM SOLVING AND CREATIVITY SCALES BY CANONICAL CORRELATION ANALYSIS

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ABSTRACT
Canonical correlation analysis, is one of the multi-variate statistics methods used for determining the relationship between two variate data sets. Although there is no obligation, in this analysis technique; one of the variate sets can be seen as dependent, and the other one being independent variate set. In the analysis process, for both of the sets, new variants from the linear combinations of the sets are obtained and the correlation between these new variants is sought to be maximum. In this study, the data for problem solving and creativity scale, gathered from 146 students studying in the department of Physical Education and Training in Yüzüncü Yıl University. After determining the basic factor for the scales using factor analysis, canonical correlation analysis is used in order to examine the relationship between two scales. According to the results obtained, the fact that coefficient of canonical correlation is positive and meaningful points out that there is positive directional relationship between problem solving and creativity. Aim of this study is to present the interaction between problem, solving and creativity of the students who study in the department of Physical Education and Training. When the results obtained from canonical correlation analysis are assessed, it is seen that for problem abilities thinking, evaluation, self-trust and planned approaches stand out and have a positive effect.

Keywords : Correlation, canonical correlation, problem solving, creativity

INTRODUCTION
Correlation analysis between sets (canonical analysis) is a statistical method used to reveal the relationships between two data sets (X and Y) consisting p>1 and q>1 number of variables (Özdamar, 2010).

The first method that comes to mind when determining the linear relationship between variables, is taking these variables two by two and calculating the coefficient of Pearson correlation between them. This coefficient is a widely used scale in determining the direction and the degree of the linear relationships between the continuous variables, when some assumptions or pre-conditions are fulfilled. If assumptions and pre-conditions are not fulfilled, one of the non-parametrical methods, Spearman rank correlation or Kendal Tau correlation can be used (Keskin and Özsoy, 2004). In some cases, the direction and the degree of the relationship can be affected by another variable or variables related to one or both of the variables. In such cases, calculating the partial coefficient of correlation related to the elimination of the affects of the variable or variables affecting the relationship between the two variables are more appropriate. In the case that there are both dependent and independent variables are more than one, meaning, in determining the relationship between two variable sets, none of the coefficients stated can be used. Instead, the correlation between sets based on finding the relationship between these variables is used by converting the variable sets into canonical variables that are made up of the linear components in these sets (Gürbüz, 1989). Simple correlation analysis is a method that states the relationship between two variables such as, Xi and Yi (i=1,..., n) and that evaluates the relationship using rxy correlation coefficient. Multiple correlation analysis is a method that evaluating the relationships between a dependent variable (Y1) and two or more independent variables (X1, X2, ..., Xp). Correlation analysis between sets is a statistical method evaluating the linear relationship between two sets including two or more variables (X1, X2, ..., Xp; Y1, Y2, ..., Yp), with the help of linear components (Özdamar, 2010).

Correlation analysis between sets, which is one of the multi-variable statistical analysis methods, requires the stages of complex analysis (Tatlıdil, 1996). Because correlation analysis between sets examines the complex structure of relationships between variable sets, difficulties in the interpretation of the results, pushes aside the usage of this method. Whereas, examining the relationship structure between the
variables emphasized on with correlation analysis between sets without breaking the relationship structure, instead of simple coefficients of relationship, will provide the researchers with more information (Kesin and friends, 2005).

In the study, the aim is to determine the structure of the relationship between the features of problem solving and creativity of students, in the department of Physical Education and Training in Yüzüncü Yıl University, using canonical correlation analysis.

MATERIAL AND METHOD

Participants

A total of 146 students made up of 87 men (59.6%) and 59 women (40.4%), from the department of Physical Education and Training in Yüzüncü Yıl University, have participated in the study.

Data gathering tools

In order to reveal the students’ problem solving abilities, the Problem Solving Inventory and How Creative Are You (Creativity) scales have been used in the study. Scales have been used simultaneously in class and without any limitation of time.

Made up of 35 points and prepared as a 6-point Likert type scale, Problem Solving Inventory, which includes the individual’s perceptions, approach of solving and the evaluation of a problem, has been developed by Heppner and Peterson in 1982, and translated into Turkish by Şahin and his friends in 1993.

Another scale, used in the study, is the How Creative Are You (Creativity) scale which has been developed by Raudsepp in 1979 and is made up of 27 points.

Statistical Analysis

Problem solving inventory, used to evaluate the individual’s problem solving abilities, is made up of 6 factors; “hasty approach”, “thinking approach”, “self trust approach”, “planned approach”, “thinking approach” and “evaluating approach”. In order to determine the validity of the scale in the sample it’s applied to, the coefficient of reliability has been calculated. For the canonical correlation analysis, the factors of the problem solving inventory has been used as they are. In order to determine the validity of the one factor creativity scale (Zeytun, 2010), coefficient of reliability has been calculated and factor analysis has been applied so that this scale could be used as a variable in canonical correlation analysis (Bektaş and Tayyar, 2009).

Given that p>1 and q>1, if there are p number of variables in the first variable set, and q number of variables in the second variable set, canonical correlation analysis takes the combinations between these two variable sets and calculates the correlation between them. Correlations, calculated this way are called canonical correlations; the new variables created by variables’ linear combinations are called canonical variables. The canonical correlations between these canonical variables are calculated separately from each other (Johnson and Wichern, 2002). For the analysis of canonical correlations to be made, some assumptions have to be provided. These assumptions can be summarized as, features showing multivariate normal distribution, non-existence of multicollinearity between variables and the width of the sample being at least 5 times of the number of variables (Keskin and friends, 2005). When X set of variables is
expressed as; $X_1=[X_1, X_2, ..., X_p]$ and $Y$ set of variables is expressed as ; $Y_1=[Y_1, Y_2, ..., Y_p]$, the average vector, calculated from the sample belonging to these variable sets, is;

$$\bar{X} = \begin{bmatrix} \bar{X}_1 \\ \bar{X}_2 \end{bmatrix}$$

And the matrix of covariance is;

$$S = \begin{bmatrix} S_{11} & S_{12} \\ S_{21} & S_{22} \end{bmatrix}$$

The correlation between $U = a'X$ linear combination of $X$ variable set and $V = b'Y$ linear combination of $Y$ variable set can be calculated.

$$\sigma^2_U = a'S_{11}a \quad E(U) = E(a'X) = a'E(X) = 0$$

$$\sigma^2_V = b'S_{22}b \quad E(V) = E(b'Y) = b'E(Y) = 0$$

When these transformations are carried out, $U$ and $V$ canonical correlation between the canonical variants is found;

$$r_{UV} = a'S_{12}b'$$

According to the conditions afore mentioned, this statement should be adjusted to maximum.

**Significance Tests of Canonical Correlation Coefficients**

As canonical correlation analysis can be also used for dimension reduction, about the correlation between the original variant sets, it should be known; of how many of the new variant pairs can it be explained with in a large extend, and in other words, how many of those among $p$ number of canonical correlation are statistically important. For this reason, we calculate the $\chi^2$ statistics, with this equation:

$$\chi^2 = \left[n - 0.5(V_1 + V_2 + 1)\right]\left[\log(\Lambda)\right]$$

In this equation, $n$; number of observation, $V_1$; number of variants in the first set (independent variable set) and $V_2$; number of variants in the second set (dependent variant set). And $\Lambda$ is calculated using;

$$\Lambda = \left(1 - R_{11}^2\right)\left(1 - R_{22}^2\right)\cdots\left(1 - R_{pp}^2\right)$$

calculated $\chi^2$ statistics is compared with $pxq$ degrees of freedom $\chi^2$ table value (Özçomak ve Demirci, 2010).

**Redundancy index**

As it is stated before, the inter-set correlation analysis maximizes the correlation between the linear variants of $X$ and $Y$ variant sets. Therefore it does not explain the variation in one of the variant sets that is explained by the other one. For this, redundancy index is calculated. Redundancy index generally is calculated for the first canonical correlation to be taken into consideration. Redundancy index ($RI_{UV}$)
which belongs to i. canonical correlation which is calculated between the $U_i$ and $V_i$ canonical variant sets, is measured in two stages. First stage; the part of the variation of Y variate set which can be averagely explained by i. canonical variant ($V_i$). This value is calculated with this equation:

$$OV(Y|V_i) = \frac{\sum_{j=1}^{q} LY_{ij}^2}{p}$$

Here, $OV(Y|V_i)$, is the mean variance that is explained by i. canonical variant of Y variate set, $LY_{ij}$, is structural correlation between i. canonical variant and j. variant of the Y variate set (j. loading of variant) and q is the number of variants belonging to the Y variate set. In the second stage, redundancy index is calculated with this equation (Sharma, 1996);

$$RI_{OLS} = OV(Y|V_i) C_i^2$$

Findings and Discussion

Reliability coefficient (Cronbach a) measured for problem solving inventory is found to be 0.80, this value is measured 0.89 for creativity scale. In order to find the variants of the creativity scale set, that will be used in canonical correlation analysis, we have used factor analysis. After assessing the results of KMO measure (0.843) of sampling adequacy tests and Bartlett’s global test ($\chi^2=2334.13; p=0.000$), it is assured that creativity scale is suitable for factor analysis. In the end of analysis, 6 factors have been found. These factors correspond to the 55.22% of the total variance. The first factor to be found includes these items; I believe that I can make original and useful things for the humanity (1), I rely on my intuitions and my sense of truth/false when I am close to solving a problem (4), I can easily change my approach if it is not good for solving a particular problem (7), I often care to work on a problem that I cannot understand thoroughly or failed to explain yet (9), the mysteries of life appeals to me (10), I believe that progressing step by step, through logical stages is the best method (12), the second method; I think self respect is more important than the respect shown by other people (5), I try to assure that I’m following the right steps solving a problem (11), it’s more important to do what I feel it is right than trying to have other people’s approval (13), I like people who prefer work over fun more (20), keeping everything in its right place and in order is important to me (21) and I am a reliable person with a sense of responsibility (25), third factor; I generally provide very quick solutions to problems (8), I might work on solving a difficult situation for a while (14), I like having new thoughts even if they don’t always lead to the right answer (22), I often try to eliminate difficulties rather than ignoring them (26) and I prefer applied subjects rather theoretical subjects (27), fourth factor; I might be engrossed in my study if it is necessary (3), I like those works that show me impressive (6), most of the time, best of my ideas come to my mind when I’m not busy with something else (15) and I think asking the wrong question is often the reason why the problem cannot be solved (23), fifth factor; I get along better with people from the same social class or who work in an alike job (18), I try to avoid subjects that I feel inadequate (19) and being accepted as a good member of the group is important to me (24), and lastly sixth factor includes; while solving a problem I work faster analysis stage but work more slowly at the synthesis stage (16), and entering a world of imagination is effective in creating many of my projects (17). Illustrative statistics measured for the variants used in this study are shown in Table 1.
Table 1. Introductory statistics

<table>
<thead>
<tr>
<th>Y variable set (Problem solving)</th>
<th>X variable set (Creativity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variants</td>
<td>( \overline{X} \pm s )</td>
</tr>
<tr>
<td>Impatient (AC)</td>
<td>3.045 ± 0.751</td>
</tr>
<tr>
<td>Thinking (DU)</td>
<td>4.357 ± 0.756</td>
</tr>
<tr>
<td>Avoiding (KA)</td>
<td>3.048 ± 0.719</td>
</tr>
<tr>
<td>Evaluating (DE)</td>
<td>4.204 ± 0.892</td>
</tr>
<tr>
<td>Self trust (KG)</td>
<td>3.946 ± 0.687</td>
</tr>
<tr>
<td>Planned (PL)</td>
<td>4.266 ± 0.891</td>
</tr>
</tbody>
</table>

In this study, we are researching to see if creativity has any impact on individual’s problem solving abilities. Problem solving and creativity scales are compromised of 6 factors. Therefore, the mean value of items in each factor is calculated and for each factor a different variant is produced. The correlation coefficients calculated between the variants from both of the variable sets are given in Table 2.

Table 2. Correlations between the factors

<table>
<thead>
<tr>
<th></th>
<th>Impatient (AC)</th>
<th>Thinking (DU)</th>
<th>Avoiding (KA)</th>
<th>Evaluating (DE)</th>
<th>Self trust (KG)</th>
<th>Planned (PL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impatient (AC)</td>
<td>1</td>
<td>-0.22**</td>
<td>-0.07</td>
<td>-0.06</td>
<td>-0.12</td>
<td>-0.07</td>
</tr>
<tr>
<td>Thinking (DU)</td>
<td>-0.22**</td>
<td>1</td>
<td>-0.01</td>
<td>0.38**</td>
<td>-0.01</td>
<td>0.56**</td>
</tr>
<tr>
<td>Avoiding (KA)</td>
<td>-0.07</td>
<td>-0.01</td>
<td>1</td>
<td>0.61**</td>
<td>-0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Evaluating (DE)</td>
<td>-0.12</td>
<td>0.38**</td>
<td>0.09</td>
<td>0.68**</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Self trust (KG)</td>
<td>-0.12</td>
<td>0.01</td>
<td>0.02</td>
<td>0.43**</td>
<td>0.09</td>
<td>0.64**</td>
</tr>
<tr>
<td>Planned (PL)</td>
<td>-0.07</td>
<td>-0.41**</td>
<td>0.02</td>
<td>0.43**</td>
<td>0.67**</td>
<td>0.67**</td>
</tr>
<tr>
<td>Factor 1 (F(_1))</td>
<td>-0.41**</td>
<td>-0.07</td>
<td>0.36**</td>
<td>0.40**</td>
<td>0.40**</td>
<td>0.40**</td>
</tr>
<tr>
<td>Factor 2 (F(_2))</td>
<td>0.02</td>
<td>0.01</td>
<td>0.35**</td>
<td>0.42**</td>
<td>0.37**</td>
<td>0.37**</td>
</tr>
<tr>
<td>Factor 3 (F(_3))</td>
<td>0.01</td>
<td>0.04</td>
<td>0.35**</td>
<td>0.42**</td>
<td>0.61**</td>
<td>0.61**</td>
</tr>
<tr>
<td>Factor 4 (F(_4))</td>
<td>0.15**</td>
<td>0.12</td>
<td>0.20**</td>
<td>0.17</td>
<td>0.19**</td>
<td>0.19**</td>
</tr>
<tr>
<td>Factor 5 (F(_5))</td>
<td>0.18**</td>
<td>0.04</td>
<td>0.14**</td>
<td>0.13</td>
<td>0.18**</td>
<td>0.18**</td>
</tr>
<tr>
<td>Factor 6 (F(_6))</td>
<td>0.18**</td>
<td>0.13</td>
<td>0.14**</td>
<td>0.16</td>
<td>0.16</td>
<td>0.16</td>
</tr>
</tbody>
</table>

When the correlation coefficients in the Table 2 are examined; among the coefficients of the inter-set correlation; except for the coefficients of correlation between the impatient and avoiding approaches; and evaluating, self trust and planned approaches, it can be seen that the coefficients of the correlation are statistically more important.

The factors in the problem solving inventory in Canonical correlation analysis are as dependent and the factors that are used in creativity scale are considered as independent variants. As the number of variants for both sets is six, the maximum canonical correlation number to obtain is also six. In order to decide which one(s) of these canonical correlations will be used, we need to take look at their statistical meaningfulness and redundancy indexes. Canonical correlations that are calculated between the canonical variate pairs are shown in Table 3.
Table 3. Canonical correlation coefficients

<table>
<thead>
<tr>
<th>Canonical Variate</th>
<th>Canonical correlation</th>
<th>p value</th>
<th>Wilk’s Lambda</th>
</tr>
</thead>
<tbody>
<tr>
<td>U_1V_1</td>
<td>0.549</td>
<td>0.000</td>
<td>0.578</td>
</tr>
<tr>
<td>U_2V_2</td>
<td>0.344</td>
<td>0.029</td>
<td>0.828</td>
</tr>
<tr>
<td>U_3V_3</td>
<td>0.195</td>
<td>0.649</td>
<td>0.939</td>
</tr>
<tr>
<td>U_4V_4</td>
<td>0.132</td>
<td>0.823</td>
<td>0.976</td>
</tr>
<tr>
<td>U_5V_5</td>
<td>0.074</td>
<td>0.838</td>
<td>0.993</td>
</tr>
<tr>
<td>U_6V_6</td>
<td>0.035</td>
<td>0.608</td>
<td>0.999</td>
</tr>
</tbody>
</table>

When the values shown in the Table 3 are examined; it can be seen that the canonical correlation (0.549; p<0.01 and 0.344; p<0.05) which is calculated between the first canonical and the second canonical correlation pairs, is statistically important. Redundancy measures for the variate sets are given in Table 4.

Table 4. Redundancy indexes

<table>
<thead>
<tr>
<th>Explained variance ratio (Creativity)</th>
<th>Redundancy index (Creativity)</th>
<th>Explained variance ratio (Problem solving)</th>
<th>Redundancy index (Problem solving)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1: 0.363</td>
<td>V1: 0.109</td>
<td>V1: 0.470</td>
<td>U1: 0.141</td>
</tr>
<tr>
<td>U2: 0.281</td>
<td>V2: 0.033</td>
<td>V2: 0.191</td>
<td>U2: 0.022</td>
</tr>
</tbody>
</table>

As it is shown in Table 4, redundancy measures that are calculated for the first canonical correlation are 0.109 for creativity and 0.141 for problem solving. For this reason, first canonical correlation is of reasonable quality. For the second function, redundancy measures are 0.033 for creativity and 0.022 for problem solving. As these values are very small, although the coefficient of the second canonical correlation has a statistical meaning, it will not be included in the assessment because its explanatory power for the variant is very small. The fact that the coefficient of the first canonical correlation is positive and meaningful shows that there is a unidirectional relationship between creativity and problem solving abilities. Standardized canonical coefficients belonging to the first canonical variate pair, canonical and cross loadings are given in Table 5.

Table 5. Standardized canonical and cross loadings belonging to the first canonical variate pair

<table>
<thead>
<tr>
<th>Problem solving (x)</th>
<th>Standardized Canonical Coefficients</th>
<th>Canonical Loadings</th>
<th>Cross Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impatient</td>
<td>-0.073</td>
<td>-0.238</td>
<td>-0.131</td>
</tr>
<tr>
<td>Thinking</td>
<td>0.352</td>
<td>0.859</td>
<td>0.472</td>
</tr>
<tr>
<td>Avoiding</td>
<td>-0.072</td>
<td>-0.027</td>
<td>-0.015</td>
</tr>
<tr>
<td>Evaluating</td>
<td>0.396</td>
<td>0.829</td>
<td>0.456</td>
</tr>
<tr>
<td>Self trust</td>
<td>0.316</td>
<td>0.819</td>
<td>0.450</td>
</tr>
<tr>
<td>Planned</td>
<td>0.112</td>
<td>0.817</td>
<td>0.449</td>
</tr>
<tr>
<td>Creativity (y)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st factor</td>
<td>0.686</td>
<td>0.896</td>
<td>0.493</td>
</tr>
<tr>
<td>2nd factor</td>
<td>0.268</td>
<td>0.737</td>
<td>0.405</td>
</tr>
<tr>
<td>3rd factor</td>
<td>0.436</td>
<td>0.773</td>
<td>0.425</td>
</tr>
<tr>
<td>4th factor</td>
<td>-0.225</td>
<td>0.329</td>
<td>0.181</td>
</tr>
<tr>
<td>5th factor</td>
<td>-0.253</td>
<td>0.218</td>
<td>0.120</td>
</tr>
<tr>
<td>6th factor</td>
<td>-0.075</td>
<td>0.283</td>
<td>0.156</td>
</tr>
</tbody>
</table>

In Table 5, standardized canonical coefficients, canonical and cross loadings are shown. Standardized canonical correlation coefficients show the amount of change in the canonical variate in terms of standard deviation, in response to 1 standard deviation increase of the original variate. In other words, these coefficients are, when the canonical variate is developing in a set, the coefficients that show the impact
value of original variates of that set. Using this table, equations belonging to the canonical variates of $U_1$ and $V_1$ can be written in this way:

$$U_1 = -0.073AC + 0.352DU - 0.072KA + 0.396DE + 0.316KG + 0.112PL$$

$$V_1 = 0.686F_1 + 0.268 F_2 + 0.436F_3 - 0.225F_4 - 0.253F_5 - 0.075F_6$$

When the equalities are examined, the biggest contribution to the formation of $U_1$ canonical variate, belongs to the evaluating approach with 0.396, following that there are thinking (0.352) and self trust (0.316) approaches, whereas it is observed that impatient (-0.073) and avoiding (-0.072) approaches have negative contributions. Similarly, first factor (0.686) has the biggest contribution to the formation of $V_1$ canonical variate for the $Y$ variable set, following that; third factor has 0.436 with the impact of standard deviation, and then the second factor has 0.268 with the impact of standard deviation. The rest; 4th, 5th and 6th factors are observed to have negative effects.

When the sample width is small and there is a multi collinearity suspicion on data set, it is expressed that using correlation coefficient between the canonical variate and the original variate of that set, would be more suitable (Sharma, 1996). These coefficients are named canonical loading or structural correlations. In Table 5, when the canonical loading of variants of the $X$ variable set, with the first canonical variate ($U_1$), the highest value belongs to the thinking approach (0.859) and the lowest value belongs to the impatient approach with -0.238. As in standardized coefficients, thinking, evaluating, self-trust and planned approach coefficients have positive effects, whereas impatient and avoiding approaches have negative effect. When the canonical loadings of coefficients of the $Y$ variable set, with the $V_1$ canonical variate are examined; the highest loading corresponds to the first factor (0.896) and after that in respective order, there is third factor (0.773), second factor (0.727), fourth factor (0.329), sixth factor (0.283) and fifth factor (0.218).

When the canonical cross loadings of the problem solving skills are examined, these are the items that forms 1st factor (0.493) which makes the largest contribution to the canonical variate of creativity;

- I believe that I can make original and useful things for the humanity (1),
- I rely on my intuitions and my sense of truth/false when I am close to solving a problem (4),
- I can easily change my approach if it is no good for solving a particular problem (7),
- I often care to work on a problem that I cannot understand thoroughly or failed to explain yet (9),
- The mysteries of life appeals to me (10),
- I believe that progressing step by step, through logical stages is the best method (12)

When the canonical cross loadings of the creativity variant are examined, the largest contribution is compromised of these items;

- Before making a decision, I compare the options and evaluate the each result by comparing and contrasting,
- I try to guess the consequence of a specific behavior,
- The first thing I do, when I encounter a problem, is to gather information and to overview the situation,
- After I make a decision, usually the result complies with the one I expect,
- When I notice a problem, one of the first things I do is to try to gain a clear understanding of the situation,

all of which make up the thinking approach variant (0.472).
CONCLUSION

Canonic correlation analysis is not widely preferred by researchers because of the difficulties encountered while interpreting the results and the calculations, along with the long process time. However; revealing the structure of the correlations between two sets of variables without disrupting the data acquired, and enabling more information to be collected are the fundamental elements that brings out the significance of this method.

In our study which examines problem solving abilities and creativity of individuals, 146 scale forms that are suitable for a healthy evaluation are taken into consideration in the process of evaluation. It is found that there is a unidirectional and middle-level relationship between problem solving abilities and creativity as a result of the canonical analysis applied to the data. This result of the study shows parallelism to the results obtained from Zaytun’s study (2010). When the results of canonical correlation analysis are examined, it is seen that thinking, evaluating, self-trust and planned approaches stand out and have positive effects problem solving abilities. Schultheiss and Steid (2004), stated that planned approach is essential in the development process of individual, regarding the effective problem solving and decision making skills. Arslan, in his study in 2005, states that self-trust approach is highly affiliated with the self perceived degree of problem solving ability, and that the more self confident the individual is, the more successful they will be. When the effects of creativity variance on problem solving abilities are looked further into, especially the first factor is distinguished form others. In addition to this, the effects of third and second factor are undeniably high. Thinking of a creative person as an individual who creates new products and proposes different solutions, we might expect them to have the ability to solve the problems encountered in the discovery stage. The higher the problem skills are, the more likely they will be to solve the problems during the discovery stage (Kiremitçi, 2011). And this might help the problem solving and the creation proves to continue in a healthier and desired route. The individual reaches their goal by solving the problems they encounter and realizes their ideals.

REFERENCES

AUTONOMY IN LEARNING ENGLISH AS A FOREIGN LANGUAGE

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ABSTRACT
As a consequence of the Turkish educational system’s shift from a teacher-centred to student-centred approach in the academic year of 2005-2006, school curricula of all subject areas have moved towards the development of learner autonomy. In response to this institutionally-directed reform, this ‘conceptual framework study’ intends to both inform researchers about the development of learner autonomy in learning English as a foreign language, and teacher autonomy considering the pivotal role that teachers have in the development of learner autonomy. That European Language Portfolios (ELPs) increase in use worldwide as a means to promote autonomy also merits attention. For this reason, the study also tries to inform researchers about ELP use and assessment in the Turkish context, and to provide the wider research community with important local messages of issues surrounding ELP implementation in schools. It further debates the issue of assessment since it requires reconsidering with the advent of ELPs.

Keywords: learner autonomy, European language portfolio, ELP, foreign language learning, EFL

INTRODUCTION
In this review we critically analyse some of the main issues surrounding autonomy and make known how the main areas of exploration in this study - learner autonomy, teacher autonomy, European Language Portfolio (ELP) use and assessment -. Of particular importance is how these issues in the Turkish context relate to research from other contexts in Europe and Asia.

Learner autonomy
More recent trends look at the way in which learners are presented with the actual situations in which autonomy is expected of them, for example, when EFL students study at western universities in preparation for content-based instruction and need to use self-access facilities (Gardner & Miller, 1994) or when they are required to use portfolios (Little, 1995, 2000). There has also been a revival in the political debate surrounding the implementation of autonomous modes of learning particularly concerning the perceived imposition of western values of educational pedagogy on to Asian learners (Sinclair, 1997; Kubota, 2002; Holliday, 2003). Certainly, learner autonomy appears to have been labelled as a western concept deeply influenced by native speakers ideology. This concept rejects styles of all non-western learners including Turkish ones who have several characteristics in common with Asian learners. This ideology is argued as being potentially insensitive and racist towards Asian learners stereotyped as passive, and therefore ineffective learners (Littlewood, 2000). Holliday (2003) and Littlewood (2000) challenge this stereotype and argue that Asian learners, although influenced by teacher-led and exam-oriented school learning experiences, do have at their disposal critical and autonomous learning strategies. Furthermore, Benson, et al. (2003) see the common perception of learner autonomy as unfairly stressing the individual and rename it in the Asian setting as “autonomous interdependence” (p. 23) due to the preference among many Asian learners for collaborative modes of learning. This is a move to rebalance the concept of autonomy to accept that autonomous strategies of learning are actually part of an Asian learner’s repertoire of learning strategies despite the years of exposure to teacher-led learning. The native-speakers version of autonomy should then be replaced by one which allows for social
autonomy, that is one which rejects the superficial western assessment of Asian learners as simply passive individuals who require “corrective training” (p. 112) to make them truly autonomous.

The recognition that learner autonomy should go beyond western definitions is also accompanied by an increasing body of literature outlining the importance of the “pedagogical dialogue” (Little, 2000, p. 3) between students and teachers, and among students themselves. This dialogue is seen as essential in the empowerment of learners, the encouragement of reflection about learning, as well as improvement in appropriate target language use. Additionally, it is an essential component in the “social mediation” (O’Malley et al, 1985) required to create a “social support system” to offer “cognitive related assistance” to newcomers in a class (Mohamed, 1997, p. 166). Biggs (1994) sees interaction as an important collaborative skill common among Asian learners, and Turkish learners yet often overlooked by western teachers seeking predominantly the development of individual learning skills in the classroom.

In order to facilitate this on-going dialogue to improve learner autonomy, it is also important for the teachers themselves to become autonomous in their own teaching and learning. Teacher autonomy and learner autonomy are therefore interlinked (Smith, 2000; Little, 2000; Sert, 2006), suggesting that teachers whose pedagogical values are deeply entrenched in teacher transmission of knowledge have a negative impact on the learners’ progress towards autonomy. The teacher’s “central role” (Balcikanli, 2008, p. 281) in young students’ lives is paramount in this process as they are often seen as their model of language learning, mentors and advisors.

**Teacher autonomy**

As with definitions of learner autonomy, teacher autonomy too requires an individual and a social dimension, both which interact to mould a teacher who is personally self-directed, reflective of their own practice, yet able to collaborate and negotiate the learning-teaching process with fellow teachers, parents and students. This “social-interactive” dimension to the teacher’s life (Little, 2000, p. 1) is similar to the concept of “situated learning” (Lave & Wenger, 1991) in that knowledge and meanings are continually co-constructed in an ongoing dialogue. The importance of such teacher autonomy in their pre-service training itself is essential for teachers later to be able to engage constructively in dialogue about autonomy with students (Barton & Collins, 1993; Sert, 2006). However, the potentially pivotal role that teachers have in the development of learner autonomy, particularly in readying younger learners before embarking on autonomous tasks (Yildirim, 2008), may be endangered by negative attitudes towards facets of autonomy embedded in teachers before teacher training begins. In their own experiences of learning, or “apprenticeship of observation” (Lortie, 1975, p.60), teachers may have developed resistance to autonomy in a “hidden pedagogy” (Denscombe, 1982, p. 259) which remerges when teaching practice actually begins.

Al-Mansoori (2008) furthers the role that autonomy plays in a teacher’s life to stress that it not only shapes professional life, but social life too, stating that an autonomous teacher is self-directed, reflective and collaborative in the community as well as at the workplace in a “life plan” or “strategy for life” (p. 36-37). This concept is echoed in Lynch’s (2001, pp. 390-391) proposal that autonomy is a concept to be practised both, within and outside of institutional boundaries. Autonomy, if exercised to its full effectiveness, needs to be an all-pervading philosophy of life shaping an individual’s personal cognition and behaviour in the community.

**European Language Portfolio (ELP)**

Turning to research in Europe, ELPs have been widely trialled over the past 10 years and are now being integrated into mainstream school education. Egel (2009) reports on the varied levels
of acceptance of the scheme in European countries, for example, in Holland where ELPs were negatively viewed, to the Czech Republic where they have been more positively received. Research from Turkey where ELPs have been trialled also points to some extent to the same issues of resistance as in Taiwan and Hong Kong in secondary schools where traditional assessment modes still prevail. Kirkgoz (2007) describes the recent shift in policy in Turkish education from traditional “pencil and paper tests” (p. 225) for assessment and notes wider acceptance of portfolio assessment as it is more “performance based” (p. 225), and is regarded as more accurately revealing a child’s language acquisition process. Neither Kirkgoz (2007) nor Tasdemir, et al. (2009) propose the wholesale replacement of the traditional Turkish testing system by portfolios but advocate a complementary system of both ELP and formal testing. This concurs with Little’s comments (2005) who recommends that formal testing procedures be retained to assess what areas of lexis, orthography, phonology and grammar students need to improve upon, as well as for course entry purposes. Tasdemir, et al. (2009) note that the success of ELP use in the Turkish context is dependent on the integration of co-operative learning in schools, a theory allowing for both traditional, standardised testing and more authentic forms of assessment such as through ELPs. Interestingly, they note that ELPs can be used not only to assess learner performance over time, but also that of the teacher as they are integral to the success of the ELP maintenance. The implementation of ELPs in a limited number of Turkish private schools is analysed by Mirici (2008) who notes that the generic assessment criteria (‘descriptors’) for the 10-14 age group have required some amendment to suit the Turkish context. Little (2005, p. 327) too comments on the limitations of the scale of descriptors as they focus “only incidentally on the qualitative aspects of language use” and are therefore difficult for personal assessment uses, especially for young learners. The descriptors are also argued as being impractical for transference over to formal testing as they are communicative in nature and purpose (Little, 2005).

Assessment

The issue of assessment is, however, one which gives rise to some debate. Chen (2006) in research into ELP use among Taiwanese learners determines that widespread ELP use is not possible as there have been misunderstandings about the assessment purposes. As standardised procedures are necessary for ELPs to replace or supplement formal testing, it is difficult to assure reliability and validity in assessment (Hamps-Lyon & Condon, 2000; Klenowski, 2002; Williams, 2000; and Dudley, 2001). Reliability and validity are seen as essential to satisfy educational bureaucrats if the objectivity associated with formal testing is to be achieved (Williams, 2000). Brown and Hudson (1998) state that ELPs intrinsically resist the idea of standardization of assessment; however, despite issues of psychometric integrity, Huot and Williamson (1997) and Moss (1994) regard the lack of reliability and validity in assessment to be less significant than the enormous benefits that can be achieved by regarding ELPs as “pedagogic tools” (Chen, 2006, p. 93). Interestingly, Tasdemir, et al. (2009) point to the reduction of impartiality in assessment through both teacher and student assessment of the ELP, yet still recommend that standardised testing schemes be retained and used alongside ELP assessment. In stark contrast though, Dudley (2001, p. 19) regards the use of portfolios for assessment purposes as one which fundamentally “distorts the concept and weakens its effectiveness.” Little (2005) too, despite being a proponent of ELP use, warns of the difficulties faced by students from traditional teacher-led testing systems when assessing themselves for the first time. Others (Song & August, 2002; Hamps-Lyon and Condon, 2000) do see great potential in actually replacing formal testing with ELP assessment. The basis for this stance is that formal testing, particularly for writing, is regarded as being “discriminating” (Hamps-Lyon & Condon, 2000, p. 61) against ESL students and ELPs can allow both native and non-native writers of English to exhibit a wider range of skills in drafting and planning, competences which cannot be assessed in formal writing tests (Reuten, 1994).
Further to the debate surrounding assessment, in educational cultures which stress examinations as a single form of assessment, some teachers tend to regard the time needed for ELP maintenance (for students and teachers) as a burden (Chen, 2006). Students accustomed to receiving grades reported in Chen’s (2006) research some dissatisfaction when work included in their ELPs was ungraded. Similarly, Lam and Lee (2009) in research in Hong Kong reveal that school teachers and parents perceive the official curriculum’s overwhelmingly exam-focus as being more of a priority than the time and effort needed to work with portfolios. The benefits of keeping portfolios in traditionally exam-oriented educational cultures are still recognised by Lam and Lee as they promote student autonomy, increase support for the learning process, and raise student awareness of the differences between studying for examinations, i.e. assessment on purely the product of taking a test and keeping a long-term ELP. However, similar to Chen (2006), frustration was reported among students who did not receive assessment grades of drafts of essays and only on their final versions. In response, Lam and Lee (2009) and Little (2005) recommend that students receive a grade in formative assessment of ELP work as well as for final summative assessment.

To sum up, this review of learner autonomy, teacher autonomy, ELP and assessment has attracted attention to the essential role that the social context plays. The collaborative process among learners and teachers has been emphasized and we have argued that ELP use may still best be seen as a pedagogic tool to work alongside a social context which promotes personal independency and interdependency in harmony.

References


CLIMATE CHANGE IN THE CHEMISTRY CURRICULUM FOR SECONDARY SCHOOLS: MALAYSIAN CONTEXT

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ABSTRACT  
Chemistry is a study about particles and is believed as an appropriate subject to develop awareness among students to love and to care the environment. Among the aims of the Malaysian Secondary School Chemistry Curriculum is to develop a concerned, dynamic and progressive society with science and technology culture that values nature and works towards the preservation and conservation of the environment (Ministry of Education, 2005). In order to accomplish this aim, one of the issues that become very critical is environmental issues such as climate change, is suitable to be incorporated in Malaysian Chemistry Curriculum since it’s related to human activities. By integrating this issue, it will help teachers to develop students’ awareness on the importance of protecting our environment and assume responsibility for sustainable future. The purpose of this article is to analyse the existing Malaysian Secondary School Chemistry Curriculum and to propose new topics and activities based on the climate change which is seemed to be neglected from the curriculum by curriculum developers. The analysis is conducted by using document analysis approach. Suggestions of activities related to climate change are proposed which is interrelated with the current chemistry concept in existing curriculum.

Keywords: chemistry curriculum, climate change, environment education

INTRODUCTION

In 21st century, industry and environment had showed an adverse relationship in various aspects. Rapid industrial growth gave many negative effects on the environment such as greenhouse effect, temperature rise, effect on weather etc. The sources of these problems are human activities because their awareness and commitment towards environment are low. This situation occurred when their belief, attitude and practice were unchanged; they refuse to accept the new style of life- LIVING GREEN. They were in the comfort zone – comfortable with their current style of life. As stated by Aini, et.al. (2003), they did not have an environmental friendly life style which more focuses on using substances or materials that are harmless to the environment and humans. Therefore, the best solution to educate people and develop awareness towards the environment with this issue is through education by introducing Environmental Education (EE).

EE was not new since it has been introduced in The United States in the early of this century. According to Haskin (1999), EE was a product of co-evolutionary process within science, public awareness of environmental issues and educational ideas. Through the process of environmental education, students will develop knowledge and concern about the natural world (Haskin, 1999). As stated by Chawla (1998), EE also can encourage a sense of caring and responsibility for the earth. EE will give a good groundwork for students to appreciate the nature in which they can transform it into action.

Thus in 1998, Ministry of Malaysian Education introduces Environmental Education (EE) to all primary and secondary schools. EE was not taught as a single subject but is taught across the subject. However, the implementation of EE was not successfully. According to Sharifah and Hashimah (2006), EE was not emphasized in school curriculum and teachers were not aware of the existence of the EE Handbook (Sharifah, 2006). The guidebook does outline the proposed activities but it is not detailed enough for teachers to do the activities. As a result, teachers ignored the EE value and most of them focused on subject content.
knowledge since our education are examination-oriented (Berhannudin, et.al., 2007; Toh, 2003). Because of this, students have not reached a certain level of commitment towards their environment (Komala, 2009).

When United Nation declared Decade Education for Sustainable Development (ESD) from the year 2005 to 2014, our government through Ministry of Education took this issue seriously. They put an effort to introduce the concept of ESD to all teachers and students by integrating it to all subjects across the curriculum. According to Zurida et.al (2009), based on the National Report of Malaysia on Development of education (2004), the concept used in ESD is not much different from the concept and components of EE. ESD is not a new concept; the focus is to develop and increase the awareness and commitment towards environment in young generations. However based on the research of Abdul Ghani and Aziah (2007), most teachers rarely integrate ESD concept in their teaching and learning process because they are lacked of that knowledge.

CLIMATE CHANGE AND CHEMISTRY EDUCATION

Although the integration of ESD was not really successful in Malaysia, in chemistry education, green chemistry was introduced by educators several years ago as an alternative towards ESD. As defined by Manahan (2006), Green chemistry as the practice of chemistry in a manner that maximizes its benefits while eliminating or at least greatly reducing its adverse impacts. It has a potential to solve environmental problem such as climate change. A question arises is why the emphasis given to the climate change issue. According to Feierabend, et.al. (2011), climate change is one of the key science-related issues in the political debate all over the world (Feierabend, et.al., 2011). It becomes a critical issue to be debated in the science education especially in Chemistry Education since the causes of climate change are related to the questions of chemistry and has consequences for other economics and social issues (Feierabend, et.al.,2011). Climate change is the ultimate weapon of environmental destruction. Now, climate change was not occurring naturally and growth rapidly. It affected natural and societal system. The main caused of climate change is human activities that were not environmentally friendly. Those activities involved chemical by-product that could react with the environment and do harm to the environment. We should not take the environmental condition for granted without taking any heed of the effects that we are now experiencing. The implementation of climate change issue in chemistry education is a need to produce sustainable youth.

Thus, by raising climate change issues, it can educate young generations especially students to solve and minimize the environmental issues. In addition, it also can enhance students’ creative and critical thinking, problem solving capabilities and science process skills. Integration of those issues will make students are more aware and able to discuss a current environmental crisis with friends, teachers and their family members. This situation will give students an opportunity to enjoy intelligently their life safely and ethical consideration about their role in having a good environment.

As chemistry teachers, they should knowledgeable on climate change issues and act as a catalyst in highlighting this issue. They play an important role to create and develop an environmentally aware among students. What ever happened in the environment should be explained by using chemistry concepts and theorist. Therefore, chemistry teacher need some guidelines on how to integrate the climate change issues concepts in their teaching. This guideline will be different from EE handbook, which focuses more on activities related to the topic in the syllabus.
Thus, this article will review the current chemistry syllabus and suggest activities related to climate change issues. It will help teachers expand their knowledge and reveal their skills and attitudes towards climate change. Implicitly, students’ awareness and commitment to environment will develop substantially.

WHERE IN THE CHEMISTRY CURRICULUM COULD WE INCORPORATE THE CLIMATE CHANGE ISSUES?

Why Chemistry curriculum? According to Parker (1989), chemistry is a study about particles and all materials in the world are made up of particles. It also provided valuable materials such as medicine, cosmetics, paint, food product, nanotechnologies, etc (Bharati, 2008). Thus, chemistry played an important role in our lives. In addition, there are five major categories in chemistry, which are related to materials, carbon-containing materials, theory and physical phenomena, chemistry of living process and identification and quantification of chemical process (Manahan, 2006). Misuse of chemistry will lead to the downside (bad) of chemistry that can harm the environment. Thus, chemistry is going to be the heart of solving the environmental issue.

In Malaysia, chemistry will be taught in Form 4 and Form 5 with the age of 16 and 17. There are four themes in Malaysian Chemistry Curriculum, which are:

1. Introduction to Chemistry
2. Matter around Us
3. Interactions between Chemistry
4. Production and Management of Manufactured Chemicals.

All themes will be taught in both forms. Each theme has its own learning areas and chemistry teachers should integrate the climate change issue in those learning areas, which have several activities. Teachers are advised to integrate those activities in their teaching process in order to increase students’ awareness and commitment to the environment.

Part A: Form Four Chemistry Syllabus

<table>
<thead>
<tr>
<th>Theme</th>
<th>Existing Learning Areas/TOPICS</th>
<th>Suggested New Subtopic</th>
<th>Suggested Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introducing Chemistry</td>
<td>Introduction to Chemistry</td>
<td>Chemistry and Environment</td>
<td>1. Students discuss and brainstorm how knowledge about chemistry affected human life and environment [Provide graphic organizer to the students – activity based – Think- pair-share]</td>
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<tr>
<td></td>
<td>To provide an understanding of chemistry as a field of study and careers for future undertaking</td>
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<tr>
<td></td>
<td>Gives students ideas about:</td>
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</tr>
<tr>
<td></td>
<td>1. common chemical substances used in daily life</td>
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<td></td>
<td>2. scientific investigation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>3. scientific attitudes and good moral value in conducting scientific investigation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Contribution of chemistry knowledge/substance to the environment</td>
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<td></td>
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<tr>
<td></td>
<td>Pros and Cons: the affects of chemistry to the environment</td>
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<tr>
<td></td>
<td>Identify chemical substance and its effects to environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>What is your contribution with your knowledge about chemistry to the sustainability</td>
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</tbody>
</table>

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### Matter Around Us

**Provide basic concepts in chemistry**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Existing Learning Areas/TOPICS</th>
<th>Suggested New Subtopic</th>
<th>Suggested Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Periodic Tables of Element</strong></td>
<td>Gives students ideas about: 1. element arrangement in periodic table 2. characteristics of elements in group and period 3. electron arrangement related to elements in group and period.</td>
<td>Environmental Friendly and Unfriendly Elements</td>
<td>and negative effects of using this substance to human and environment – short term and long term</td>
</tr>
<tr>
<td><strong>Environmental Friendly and Unfriendly Elements</strong></td>
<td>Students need to understand the element and its chemical and physical characteristics and how these elements can be classified into Environmental Friendly and Unfriendly Elements.</td>
<td>1. A teacher asks students to choose an element in each group and discuss its characteristics as well as making conclusion about this element. 2. Then stimulate the discussion of the substance produced when these two elements react to each other. 3. Students need to identify and classify whether this new substance is environmentally friendly or not.</td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Friendly and Unfriendly Compound</strong></td>
<td>Pros and Cons: the use of environmentally compound in our daily life.  How the Unfriendly compound affect the climate change.</td>
<td>4. A teacher will prepare some cards with an element written on such as H, N, O, N, K, Cl or students choose by their own. [the elements can be from the syllabus or from the internet]. All cards are distributed to students. They have to find partners and form a compound. They will discuss and write the FORMULA of that compound.</td>
<td></td>
</tr>
<tr>
<td><strong>Understanding about Chemical bonds (ionic and covalent bond)</strong></td>
<td>Type of bonding can influence characteristics of the substance  How well ionic and covalent bond trapped the heat</td>
<td>5. At the end of activity, students need to categorize the compound into two categories, environmentally friendly or environmentally harmful and give some reason about their choice.</td>
<td></td>
</tr>
<tr>
<td><strong>Chemical Bonds</strong></td>
<td>Give students idea about: 1. naturally occurring</td>
<td>6. A role-play will take place. Three students act as ozone (A) and a group of students act as chlorine gas, tetrafluoromethane, or</td>
<td></td>
</tr>
<tr>
<td><strong>Chemical Formulae and Equation</strong></td>
<td>Give students an idea about: 1. number of particles, number of moles, mass number of substance, mass number of element, volume of gasses 2. empirical and molecular formula 3. naming the substances by using IUPAC 4. chemical reaction and balance the equation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theme</td>
<td>Existing Learning Areas/TOPICS</td>
<td>Suggested New Subtopic</td>
<td>Suggested Activities</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------</td>
<td>------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>compounds</td>
<td>2. the formation ionic and covalent bond 3. The characteristics of ionic and covalent compound</td>
<td>compound. The characteristics may have hazardous effects on the environment</td>
<td>sulfate compound (B). Teachers will ask students(A) to react with students(B) and other students will write a complete equation for that reaction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7. They also discuss the effects of ozone depletion towards human’s health and environment using cause and effect graphic organizer (go) example: fishbone diagrams.</td>
</tr>
<tr>
<td>Interactions Between Chemicals</td>
<td>Electro-Chemistry</td>
<td>Fuel Cells</td>
<td>1. After students have learned about Voltaic cells, teachers will introduce Fuel Cells to students. A teacher will guide students to build the model of fuel cells. They also discuss on how the fuel cell works.</td>
</tr>
<tr>
<td>To provide understanding of chemical reaction and application of chemical reaction in industries</td>
<td>Give students idea about: 1. electrolysis process of molten compound and aqueous solutions 2. half equation at anode and cathode 3. electrolysis in industry 4. simple voltaic cell and Daniell cell 5. conducting an experiment of electrolytic cell and voltaic cell</td>
<td>The use of fuel cell in automobile industry The effect of fuel cell towards environment The advantage and disadvantage of fuel cells Comparing the used of fuel cell and lead-acid accumulator in vehicle Why we need to change to fuel cell? What are the effects of Plumbum to the environment?</td>
<td>2. They also discuss several methods how to store the used battery (chemical cells) safely.</td>
</tr>
<tr>
<td></td>
<td>Acids and Bases</td>
<td>Acid Rain and its effects</td>
<td>3. Besides, a crossword puzzle is also given to students. Refer to Appendix 1.</td>
</tr>
<tr>
<td>Give students idea about: 1. characteristics and properties of acids and bases 2. differentiate the degree of dissociation for strong and weak acids and bases 3. preparing dilute solution of acids and bases 4. analysing neutralisation 5. solving numerical problems on molarity and neutralisation 6. write a balance equation 7. conducting an experiment acid-base</td>
<td>In this topic, students will learn the: The benefit of acids and bases and its reaction such as neutralization to environment and people? The Formation of acid rain How this phenomenon affects environment? Ways to overcome this problem Ways to handle or relinquish acids or bases when they are no longer used.</td>
<td>4. A teacher gives a poem of acid rain and asks them to analyse it.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Poem: I need sulphur dioxide I need nitrogen oxide All of these substances combined with air and I was born. I can harm your favourite plants I can attack trees by causing brown dead spot I can damage a building and statue I can do bad stuff to the environment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Students will write a balanced equation: the formation of acid rain by sulphur dioxide and nitrogen dioxide.</td>
</tr>
</tbody>
</table>
### Part B: Form Five Chemistry Syllabus

<table>
<thead>
<tr>
<th>Theme</th>
<th>Existing Learning Areas/TOPICS</th>
<th>Suggested New Subtopic</th>
<th>Suggested Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production and management of manufactured Chemicals</strong>&lt;br&gt;Enable students to understand the manufacturing of chemicals for daily and social needs.</td>
<td><strong>Manufactured Substances in Industry</strong>&lt;br&gt;Gives students an idea about:&lt;br&gt;1. manufactured of sulphuric acids, ammonium and its salts&lt;br&gt;2. the importance of alloy and synthetic polymer in daily life</td>
<td><strong>The effect of nitrogen based fertilizers and synthetic polymers</strong>&lt;br&gt;&lt;b&gt;Nitrogen based fertilizer&lt;/b&gt;&lt;br&gt;The used of fertilizer.&lt;br&gt;Type of fertilizer – organic/synthetics/ environment.&lt;br&gt;Long term effects of using nitrogen based fertilizer.&lt;br&gt;Ways to reduce the used of nitrogen based fertilizer.&lt;br&gt;&lt;b&gt;Bio-based Polymers&lt;/b&gt;&lt;br&gt;What are the bio-based polymers?&lt;br&gt;How do the bio-based polymers may affect our environment?</td>
<td>Students will do a simple experiment on plant in two different situations:&lt;br&gt;a. nitrogen-based fertilizer&lt;br&gt;b. plant-based fertilizer&lt;br&gt;Record the plant’s growth and test the soil pH.&lt;br&gt;Project for Science Club Activity: Students will do “Composting” activity.&lt;br&gt;Students will do a simple experiment on 2 types of substances:&lt;br&gt;a. synthetic polymers&lt;br&gt;b. bio-based polymers&lt;br&gt;Both substances will be planted in the soil for 4 weeks. Students will record the observation.</td>
</tr>
<tr>
<td><strong>Interactions Between Chemicals</strong>&lt;br&gt;To provide understanding of chemical reaction and application of chemical reaction in industries</td>
<td><strong>Rate of Reaction</strong>&lt;br&gt;Give students ideas about:&lt;br&gt;1. observable changes to reactants&lt;br&gt;2. methods of measurements&lt;br&gt;3. factors affecting rate of reactions&lt;br&gt;4. Collision theory&lt;br&gt;5. Problem solving related to rate of reactions</td>
<td><strong>Climate Change</strong>&lt;br&gt;What is climate change&lt;br&gt;The relationship of global warming, greenhouse effect and climate change&lt;br&gt;What are the factors that will increase the rate of climate change&lt;br&gt;&lt;br&gt;<strong>Global warming</strong>&lt;br&gt;&lt;br&gt;<strong>Carbon Compounds</strong>&lt;br&gt;Students will discuss the rate of climate change by using an example such as:</td>
<td>Students will discuss the rate of climate change by using an example such as:&lt;br&gt;The graph of global CO₂ concentrations:&lt;br&gt;Ask students to predict the atmospheric concentrations of CO₂ in the year 2015-2020 and reasons why this situation occurred.&lt;br&gt;Students also discuss the relationship between CO₂ other greenhouse gaseous and the rate of climate change.</td>
</tr>
</tbody>
</table>
Give students an idea about:
1. Physical and chemical properties of alkanes, alkene, alcohols, carboxylic acid, fats
2. Reaction of carbon compounds
3. Chemical test to differentiate the types of carbon compound
4. The existence of isomerism
5. Writing a chemical reaction

Thermochemistry
Give students an idea about:
1. Exothermic and endothermic reactions
2. Heat of reaction of different types of reactions
3. Problem-solving on various types of heat of reactions

What is global warming?
Global warming and greenhouse effect.
The effect of greenhouse gaseous on the rate of global warming
How to reduce the rate of global warming

Renewable energy
Listed the sources energy in our current
Discuss and brainstorming how this sources is found and its use?
Are these sources can be reduced in its volume? Discuss and how it is affect our life and environment?
Definition of Renewable energy and why it is important.
The used of Renewable energy in Malaysia and other country. What Malaysians can learn from others?
The efficient of renewable energy.

Students will write the chemical formulæ of greenhouse gaseous.
Students discuss the greenhouse effect and global warming. Brainstorm how does it happen by using Graphic organizer.
They also discuss the cause and effects of global warming towards humans and environments by using Y-shape Graphic organizer.

Students will analyse the graph:
1. The relationship between oil production and oil consumption
2. Predict the oil production in the year 2015

Students will discuss renewable energy in Malaysia. Students will compare and contrast the efficient of renewable and non-renewable energy by using graphic organizer.

CONCLUSION
Climate change is an important issue around the world. Thus, by having such activities in the chemistry curriculum, students will not only deepen their understanding on climate change effect but also will increase their awareness and commitment to the environment. By some means, this integration also can affect the teachers in improving their knowledge and awareness towards the climate change. They will also attempt to figure out an alternative way in order to sustain the environment. Teachers should make an effort to implement the message of climate change. They play an important role to educate students to love and save the environment by reducing the impact of climate change.

Education is the fundamental building block in our lives. Children are just as a blank paper and teachers are like the painters who paint the students with colourful knowledge. Every single effort in education probably helps to produce responsible generations who are more creative and dynamic in the future. Hence, by educating students with climate change concepts, they will be environment-oriented citizens and able to adapt climate change-related trends. What we hope is the teachers will integrate those proposed activities continuously as their teaching practice rather than as their work burden.

REFERENCES


**Appendix 1** (Crossword Puzzle)

Across

1. Fuel cell is an ___________ device.
4. An anode is the ________ electrode in an electrical device.
6. ___________ is a chemical means in the transfer of ions from one medium to another.

Down

2. Fuel cell produces electricity from __________ on the anode site.
3. Fuel cell produces an __________ on the cathode side.
5. A cathode is the ____________ electrode in an electrical device.

THE EFFICIENCY OF A PSYCHOLOGICAL INTERVENTION FOR THE CHILDREN HAVING THEIR PARENTS LEFT TO WORK ABROAD

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ABSTRACT
The migration of the workforce has constantly grown in the past decade. In UNICEF’s and Alternative Social Association’s reports it is shown that in 2008, in Romania 350,000 children had one of their parents gone and 126,000 had both of their parents gone off to work elsewhere. The participants to this study were 40 children, aged 9-10, who had in that time one or both parents at work, abroad. Randomly, they were grouped in intervention group and control group. The intervention activities focused on self-knowledge, strengths, self-esteem, social skills, emotional and behavioral control. Significant results were found, on different dimensions. Implications of the study will be discussed

Keywords: psychological intervention, social and emotional development, children, parents left to work abroad

INTRODUCTION
The programs initiated by Ann Vernon, Thinking, Feeling, Behaving (Vernon, 1989) and the Passport Program (Vernon, 1998) offer a comprehensive curriculum for teachers, counselors, educational psychologists, social workers so they can use it to help children and adolescents learn the core concepts about mental health. Bernard’s and his collaborators’ research shows that these four foundations are sustained by 11 positive skills of the mind: 1. Self-acceptance, 2. Risk taking, 3. Independence, 4. Optimism, 5. Internal Locus of Control, 6. Frustration tolerance, 7. Goal setting, 8. Time management, 9. Tolerance of others, 10. Reflective problem solving, 11. Tolerance of limits. These skills form a positive mindset. The program has experimental support and is being successfully applied in schools from Australia, the United States of America and England (Ellis and Bernard, 2007).

Hudson (1993, apud Bernard, 2006) examines the effect of rational–emotional education on school performance, motivation and self-esteem (You Can Do It Program). He found significant differences in favour of the experimental group with regards to their performance at mathematics and reading. There haven’t been significant differences concerning the self-concept, motivation and the evaluations conducted by the teachers.
The migration of the workforce has constantly grown in the past decade, the majority of the international migrants, approximately 64 million having their residence in Europe. In UNICEF’s and Alternative Social Association’s reports it is shown that in 2008, in Romania 350,000 children of their parents gone and 126,000 had both of their parents gone off to work elsewhere (http://www.unicef.ro/files/copii-ramasi-acasa-.pdf, at 21.05.2010).

The research rapport of the study “Migration effects: the children left at home. The risks and the solutions” realized by Soros Foundation Romania (http://www.soros.ro/ro/publicatii.php) emphasize the existence of a larger number of negative consequences compared to the positive ones, which are coming together with the higher financial level for the Romanian children and adolescents left at home after their parents decided to work abroad. The frequent problems are depressive symptoms, loneliness feelings, abandonment.

An aspect of the family that can transform it into a potential risk factor lies within its structure. Many single parents prove to have all the necessary abilities to offer their children a proper education, however quite often the risk to generate social–emotional problems is revealed. The most frequent incomplete parenting scenarios are the ones generated by divorce, death, incarceration, temporary separation through working abroad. These aspects will be discussed as follows.

The present study is based on the studies conducted by Bonchis, Birle, Stan (2010), Bonchis, Birle, Roman (2010) and Secui, Dindelegan, Roman (2010) which state that there are significant differences between the children with and incomplete parenting scenario due to their parents leaving to work and the children with both parents. The authors mention the necessity of an intervention program focusing on the social – emotional dimension, dimension on which the incomplete parenting situation has had an impact.

The main objective of the present study is to demonstrate the efficiency of a rational-emotional and behavioral educational program for the children in the situation of incomplete parenting (on the level of irrationality, the optimization of social relations and behavioral problems, respectively the increase in self-esteem).

**METHOD**

**Research Hypothesis**

Children in the situation of incomplete parenting increase their level of self-esteem, improve the quality of peer relation and the self-control and, also, decrease the level of irrationality.

**Design**

Repeated measures, with control group.
Participants

The participants to this study were 40 children, aged 9-10, who have one or both parents at work abroad. Randomly, they were grouped in intervention group and control group. All participants are from the suburb area of Oradea town, where the life quality is not very good.

Instruments

The following instruments were used:

- A measure of self-esteem, in relation with peers (alpha Cronbach = .75), with family (alpha Cronbach = .86) and with school (alpha Cronbach = .84), consisting in 28 items, having the items from *Hare self-esteem scale* (Bruce R. Hare, 1985, apud Fischer, J. & Corcoran, K., 1994) as a base line in constructing the new items;
- Child and Adolescent Scale of Irrationality, (CASI - Bernard and Laws, 1988, apud Trip, 2007). Trip (2007) presented the results of the validity study for this scale on Romanian population;
- Self-statement scale for the social interaction with others, is a measure of social anxiety, consisting in 23 items and two factors – positive and negative cognitions during social interactions. The items were generated on the same structure as the items from Social Interaction Self-Statement Test (Glass, Merluzzi, Biever, Larsen, 1982, apud Fischer, J. & Corcoran, K., 1994). Alpha Cronbach was calculated for the two subscales: .74 for positive cognitions and .86 for negative cognitions associated with social interactions;
- Self-control rating scale – SCRS; Kendall, Wilcox, 1979, apud Fisher, Corcoran, 1994. With 58 evaluators, an alpha Cronbach = .80 was found, for the 33 items.

Procedure

The pretesting for intervention group took place at the beginning of January of the school year 2009-2010. The intervention took place throughout 10 weeks, once a week for one hour. The topics covered throughout the program are part of the program proposed by Birle (in Bonchis coord., 2010). The intervention activities were carried out by a school psychologist, who worked together with the teachers, in a school from Oradea town suburb.

RESULTS

Data were collected and analyzed, using descriptive and inferential statistics. Data distributions were normal in population (conclusions after calculated Kolmogorov-Smirnov test) for the variables implied in the study. Factorial ANOVA was used for the effect of intervention and group variables on the social and emotional dimensions. The results presented here are mostly focused on the psycho-educational program effect for the intervention group.
Table 1. Means and standard deviations for the self-esteem (SE) dimensions in pretest, posttest and follow-up moments

<table>
<thead>
<tr>
<th>variables</th>
<th>N</th>
<th>m pretest</th>
<th>s.d. pretest</th>
<th>m posttest</th>
<th>s.d. posttest</th>
<th>m follow-up</th>
<th>s.d. follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>General SE</td>
<td>20</td>
<td>76.05</td>
<td>5.08</td>
<td>93.10</td>
<td>8.51</td>
<td>93.35</td>
<td>8.89</td>
</tr>
<tr>
<td>SE - peers</td>
<td>20</td>
<td>23.55</td>
<td>1.87</td>
<td>29.80</td>
<td>4.95</td>
<td>29.00</td>
<td>4.87</td>
</tr>
<tr>
<td>SE - family</td>
<td>20</td>
<td>26.25</td>
<td>1.97</td>
<td>32.65</td>
<td>2.58</td>
<td>33.05</td>
<td>3.45</td>
</tr>
<tr>
<td>SE - school</td>
<td>20</td>
<td>26.25</td>
<td>3.61</td>
<td>30.65</td>
<td>3.84</td>
<td>31.30</td>
<td>2.93</td>
</tr>
</tbody>
</table>

Intervention

| General SE  | 20 | 85.05     | 8.94         | 85.20      | 8.30          | 88.05       | 11.78          |
| SE - peers  | 20 | 26.50     | 4.38         | 27.05      | 2.60          | 27.50       | 3.05           |
| SE - family | 20 | 31.35     | 3.18         | 31.05      | 2.39          | 31.60       | 4.61           |
| SE - school | 20 | 27.20     | 4.38         | 27.10      | 5.98          | 28.95       | 6.63           |

Control

For all dimensions of self-esteem, we found significant differences for intervention factor and also for group factor. For the SE in relation with peers, we found for intervention factor \( F(2;76)=10.875, p<.01 \), for SE – family, we found \( F(2;76)=15.728, p<.01 \), for SE – school the results show \( F(2;76)=6.617, p<.01 \). For the general SE, the F value is \( F(2;76)=18.374, p<.01 \).

Table 2. Means and standard deviations for the social relations in pretest, posttest and follow-up moments

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>m pretest</th>
<th>s.d. pretest</th>
<th>m posttest</th>
<th>s.d. posttest</th>
<th>m follow-up</th>
<th>s.d. follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>20</td>
<td>39.65</td>
<td>4.23</td>
<td>29.00</td>
<td>8.52</td>
<td>26.55</td>
<td>8.69</td>
</tr>
<tr>
<td>Control</td>
<td>20</td>
<td>33.05</td>
<td>12.79</td>
<td>29.55</td>
<td>3.61</td>
<td>30.80</td>
<td>9.08</td>
</tr>
</tbody>
</table>

We found statistical significant results for intervention factor, the obtained values are \( F(2;76)=9.731, p<.01 \).

Table 3. Means and standard deviations for the irrationality in pretest, posttest and follow-up moments

<table>
<thead>
<tr>
<th>variables</th>
<th>N</th>
<th>m pretest</th>
<th>s.d. pretest</th>
<th>m posttest</th>
<th>s.d. posttest</th>
<th>m follow-up</th>
<th>s.d. follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrationality</td>
<td>20</td>
<td>88.70</td>
<td>9.75</td>
<td>73.75</td>
<td>10.42</td>
<td>74.85</td>
<td>10.31</td>
</tr>
<tr>
<td>LFT work</td>
<td>20</td>
<td>25.65</td>
<td>4.65</td>
<td>21.55</td>
<td>6.86</td>
<td>20.25</td>
<td>7.63</td>
</tr>
<tr>
<td>Global eval.</td>
<td>20</td>
<td>24.85</td>
<td>3.55</td>
<td>18.45</td>
<td>4.14</td>
<td>19.80</td>
<td>6.15</td>
</tr>
<tr>
<td>Absol. demand.</td>
<td>20</td>
<td>21.65</td>
<td>2.75</td>
<td>19.90</td>
<td>4.93</td>
<td>20.95</td>
<td>5.49</td>
</tr>
<tr>
<td>LFT rules</td>
<td>20</td>
<td>16.55</td>
<td>2.99</td>
<td>13.85</td>
<td>2.60</td>
<td>13.85</td>
<td>2.60</td>
</tr>
</tbody>
</table>

Intervention

| Irrationality| 20 | 85.60     | 16.00        | 72.65      | 11.80         | 73.55       | 13.29          |
| LFT work     | 20 | 25.45     | 6.90         | 24.00      | 4.82          | 24.30       | 6.13           |
| Global eval. | 20 | 23.50     | 5.31         | 19.45      | 4.59          | 19.80       | 5.35           |
| Absol. demand.| 20 | 21.10     | 4.37         | 16.85      | 3.51          | 17.50       | 3.62           |

Control
For LFT (low frustration tolerance) in relation with rules dimension we found significant differences, \[ F(2;76)=3.474, p<.05 \], for absolute demands for justice we found, for intervention factor \[ F(2;76)=5.516, p<.01 \], for global evaluation of self we found \[ F (2,76)=13.099, p<.01 \]. Also, for LFT in relation with work dimension, related to intervention factor, the results are \[ F(2;76)=25.520, p<.01 \]. The global score of irrationality show also significant differences between the intervention moments, with \[ F(1.728;65.671) =17.821, p<.01 \]. When we analyze the result of the control group, we can see how irrationality slightly decreases, so we can hardly consider the results of the intervention group as a consequence of our intervention.

<table>
<thead>
<tr>
<th>LFT rules</th>
<th>20</th>
<th>15.55</th>
<th>4.13</th>
<th>11.95</th>
<th>2.03</th>
<th>11.95</th>
<th>2.03</th>
</tr>
</thead>
</table>

Tabel 4. Means and standard deviations for the self-control in pretest, posttest and follow-up moments, as evaluated by teachers

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>m pretest</th>
<th>s.d. pretest</th>
<th>m posttest</th>
<th>s.d. posttest</th>
<th>m follow-up</th>
<th>s.d. follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>20</td>
<td>86.75</td>
<td>23.31</td>
<td>61.10</td>
<td>14.17</td>
<td>60.85</td>
<td>12.61</td>
</tr>
<tr>
<td>Control</td>
<td>20</td>
<td>69.20</td>
<td>19.93</td>
<td>70.25</td>
<td>24.08</td>
<td>68.25</td>
<td>22.14</td>
</tr>
</tbody>
</table>

We found statistical significant differences between the level of self-control problems compared in pretest, posttest and follow-up moments \[ F(1.456;55.231)= 7.919, p<.01 \]. In the teachers’ opinion for the intervention group the self control problems dramatically reduced from pretest to posttest.

**CONCLUSION**

All the research hypothesis were sustained by the results of inferential statistics. ANOVA bifactorial was the statistical procedure used in the data analysis and the research design is a mixed one.

We consider that this intervention program proved its efficiency in reducing emotional, social and behavioral problems of the children who have the parents left to work abroad. The school psychologists and the teachers who are trained in school psychology are encouraged to use this program to support these children. More and more children are affected by this situation. These children are also in danger to dropout school because of the loss of motivation for learning. This loss of interest and motivation is based, frequently, on the loneliness, depression and abandonment feelings they experience. It is necessary to support them, in a multisystemic intervention: to imply the extended family, to imply the local community, school, psychological services and social assistance services.

**REFERENCES**


Acknowledgements
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THE RELATIONSHIP BETWEEN INTERNET ADDICTION AND PSYCHOLOGICAL SYMPTOMS

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ABSTRACT
The aim of this study is to reveal the relationship between internet addiction and psychological symptoms among university students. The research was conducted among university students in North Cyprus. The sample for the research consists of 36.5% (n=46) female, 63.5% (n=80) male, 126 university students who were selected according to the criterion sampling method. “Brief Symptom Inventory (BSI)” adapted by Şahin and Durak (1994), the Cronbach’s alpha reliability coefficient of .96, “Internet Addiction Scale (IAS)” adapted by Bayraktar (2001) with a Cronbach alpha reliability coefficient of .90 and Biographic-Demographic Information Form were used for collecting data. Percentage documentation average, ANOVA and Pearson Moment’s correlation tests were used in data analysis. The statistical significance level was accepted as .05 in the study. The results of this study show that there is a significant correlation between internet addiction and psychological symptoms as somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism.

Keywords: Internet, internet addiction, psychological symptoms.

INTRODUCTION

Internet is a tool that has socio-economic, cultural and political dimensions in information society. Computer and internet usage has the potential to develop and change the existing social structure of society (Demir, 2006). In our country the internet has become an integral part of daily life as it is all over the world.

The internet evolved from the ARPANET, which was developed in 1969 by the Advanced Research Projects Agency (ARPA) of the U.S. Department of Defense. The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to serve billions of users worldwide. The internet is a network of networks that consists of millions of private, public, academic, government networks and business. It represents a global platform that permits digital information to be shared and distributed at very little cost to users. The Internet provides a wide range of information interaction functions, including: communication (i.e., sending e-mails, chatting, transmitting data, social networking, etc.), accessing information (i.e., searching databases, reading electronic books, etc.), and supplying information (i.e., transferring files, graphics, etc.) (Stallings, 2004).

Computers and internet tools are providing unlimited and developmentally appropriate environment of the children and adolescents. But sometimes children and adolescents with negative sexual information through computer and internet also violent behavior, alcohol, smoking habits, gambling and unhealthy eating problems can acquire undesirable habits (ref. Arnas, 2005). Although the basic purpose of the emergence of the internet attain information easy, cheap, fast and secure access to become facilitate the communication and rapid spread of the internet usage reveal that pathological over-estimated and a new type of dependency can be classed as internet addiction (Arısoy, 2009).
Researchers argued that extremely use of the internet compares the other addictions and play excessive computer-internet games develop that formed a kind of addiction to the internet users. Internet addiction defined as the problem that connected internet to the excessive spending time at a computer. In addition, the internet likes gambling addiction may be obtained as depressive tendencies, cause health problems and a lack of sleep (ref. Kelleci et.al., 2009).

The term “Internet addiction” explained that pathological compulsive internet usage was proposed by Dr. Ivan Goldberg. This term has been used to describe problematic, excessive, or mal-adaptive use of the internet. Internet addiction known as pathological internet usage, is a type of impulse control disorder similar to other addictions. People use the Internet to avoid problems in their lives or because they lack social skills (ref. Aslanbay, 2006).

The Young was first introduced the term of internet addiction in 1996. The Internet addiction symptoms are described by Cengizhan and Young as;

- Excessive mental effort on internet
- Spending hours even though being intended to spend couple of minutes
- Exposure to health problems due to spending hours in front of the screen each time
- Continuously waiting for the next connection time
- Feeling more comfortable contacting people over internet than talking face-to-face
- Feeling a continuous desire for checking e-mails whether there is something new
- Decrease in meals, lessons or work efficiency due to using internet or staying connected
- Trying to give or spread the mail address, chat room names etc. to everybody
- Continuously feeling sleepless and tired because of staying connected to the internet until late
- Having failure in attempts to decrease the internet usage
- Withdrawal syndrome due to decrease in the internet usage
- Telling lies to family members, therapist or others to be able to stay connected to the internet
- Having affection changes in the duration of internet connection (Young, 1999; ref. Öztürk et. al. 2007; ref. Balta, Horzum, 2008).

Addiction has extended into the psychiatric explanation to identify problematic internet use associated with significant social, psychological and occupational impairment. Symptoms of excessive internet usage, increased anxiety when off-line, hiding or lying about the extent of online use, impairment to real-life functioning and also directly lead to social isolation, increased depression, familial discord, divorce, academic failure, financial debt and loss of job (Young et. al. 2000).

The need to spend increasing amounts of time on computer activities such as playing games, arranging files or participating in online discussion groups are indicated by psychological tolerance. Computer users are aware of this problematic behavior but they continue to use the computer compulsively. When a person is unable to access a computer they showed that withdrawal symptoms are indicated by an increase in irritability and anxiety (ref. Orzack, 1998; ref. Kim, Haridakis, 2009).

Somatization is psychological distress arising from perception of bodily dysfunction such as cardiovascular, gastrointestinal, respiratory other systems with strong autonomic mediation and aches, pains, discomfort localized in the gross musculature are signs. Obsessive-compulsive is thoughts and behaviors that are experienced as unremitting and irresistible by the patient. Interpersonal sensitivity is focuses on feelings of personal inadequacy and inferiority (Derogatis, Melisaratos, 1983). People are isolating medium leading to loneliness, less social
interaction with family members and friends and clinical depression arguing that some potential
negative effects of the internet (ref. Kim, Haridakis, 2009).

Depression is symptoms of dysphoric affect and mood, loss of interest in life activities and
feeling of hopelessness (Derogatis, Melisaratos, 1983). Internet addict adolescents have been
reported that depression, lower self-esteem and lower life satisfaction. Clinical depression
associated with increased levels of internet usage (Young, Rodgers, 1998; Yen et. al., 2008).

Anxiety reflects restlessness, nervousness and tension as experiences reflecting free-floating
anxiety and panic. Hostility is organized that three categories: thoughts, feelings and behaviors.
It reflects feelings of irritability, urges to break things and uncontrollable outburst of temper.
Phobic anxiety reflects phobic fears that towards travel, open spaces, public spaces etc. Paranoid
ideation refers that mode of thinking as projection, hostility, suspiciousness, centrality and fear
of loss of control are primary symptoms. Psychoticism reflects symptoms of a schizoid and
progressing from a mildly alien life style at one extreme to psychotic status (Derogatis,
Melisaratos, 1983).

Internet addiction, which is defined as a new type of addiction, became an important study area
that attracts the interest of different disciplines including psychology, sociology and
communication (Balci, Gulnar, 2009). Adolescents are more close to technology so their
relation with internet is the interest of researchers from many fields. Therefore in the field of
education for take fully benefit from computers, research is needed multi-faceted and at each
level in many areas.

The Aim of the Study

It was aim to reveal the relation between internet addiction and psychological symptoms among
university students.

The Problem Statements of the Study

The main problem statement of the study is stated as follows: “Is there any statistical
meaningful correlation between internet addiction tendency and psychological symptoms in
university students?”

Sub Problems

The study aims to answer the following sub problem questions.

1. Is there any statistical meaningful correlation between internet addiction and
   psychological symptoms?
2. Is there any statistical difference between internet addiction and duration of daily
   internet usage?
3. Is there any statistical difference between psychological symptoms and duration of daily
   internet usage?

RESEARCH METHODOLOGY

Research Design

The descriptive type of research was carried out via the descriptive type and is in accordance
with the associational research model. This type of research aims to evaluate the degree and the
variation between two or more variables (Karasar, 2009).
The Universe and Sample of the Study

The universe of the study consists of the students at the universities in North Cyprus. The sample consists of 36.5% (n=46) female, 63.5% (n=80) male, 126 university students who were selected according to purposive sampling techniques of criterion sampling method. According to modify sample of study students have own personal computer set as a criteria.

Instruments

In the collection of data in this study Brief Symptom Inventory (BSI), Internet Addiction Scale (IAS) and Biographic-Demographic Information Form are used.

Biographic and Demographic Information Form is prepared by the researchers and it is arranged according to the suitability with the aims of the study. It is formed of 14 questions. This form people are subjected to demographic features related questions (sex, which school and class he/she attends etc.) and computer-internet usage related questions as well.

Brief Symptom Inventory (BSI) was developed by Derogatis (1992) and adapted by Şahin and Durak (1994) in Turkish language. The Cronbach’s alpha reliability coefficient of .96 and the subscales reliability which was varied between .55 and .86 is a measure that psychological symptoms. The measure is formed 53 items covering 9 psychological symptom dimensions as somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. BSI has three global indices measure current or past level of symptomatology, intensity of symptoms and number of reported psychological symptoms (Şahin, Savaşır, 1997).

Internet Addiction Scale (IAS) was developed by Young (1996) and adapted by Bayraktar (2001) in Turkish. The Cronbach’s alpha reliability coefficient is .90. The measure is formed of 20 items and it aims to measure internet addiction symptomatology (Kurtaran, 2008).

Data Analysis

In the statistical evaluation of the research all analyses are performed by using SPSS 15.0 for windows. Considering purposes of the study percentage documentation average, ANOVA, Pearson moment’s correlation were figured out in data analysis. The significance level was taken as .05 in this study.

RESULTS

In this study, the following results were found according to the problem statement and sub-questions of the study. The first sub-questions of the research were expressed as “Is there any statistical meaningful correlation between internet addiction and psychological symptoms?”
Table 1. Correlation of BSI test scores with IAS test scores

<table>
<thead>
<tr>
<th>Scales</th>
<th>IAS</th>
<th>Somatization</th>
<th>Obsessive-Compulsive</th>
<th>Interpersonal Sensitivity</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Hostility</th>
<th>Phobic Anxiety</th>
<th>Paranoid Ideation</th>
<th>Psychoticism</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>.360**</td>
<td>.455**</td>
<td>.499**</td>
<td>.496**</td>
<td>.471**</td>
<td>.392**</td>
<td>.512**</td>
<td>.505**</td>
<td>.431**</td>
</tr>
<tr>
<td>n</td>
<td>.126</td>
<td>.126</td>
<td>.126</td>
<td>.126</td>
<td>.126</td>
<td>.126</td>
<td>.126</td>
<td>.126</td>
<td>.126</td>
<td>.126</td>
</tr>
<tr>
<td>p</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

** p<.001 statistically meaningful correlation

Pearson Moment’s Correlation Test was applied in order to determine whether there is a statistically meaningful correlation between Brief Symptom Inventory and Internet Addiction Scale scores of the students.

The analysis of the data implies that there was a statistically meaningful moderate positive correlation between internet addiction score and Phobic Anxiety (r=.512) and Paranoid Ideation (r=.505) subscales of Brief Symptom Inventory. Statistically meaningful mild positive correlation between internet addiction score and Somatization (r=.360), Hostility (r=.392), Psychoticism (r=.431), Obsessive-Compulsive (r=.455), Anxiety (r=.471), Depression (r=.496) and Interpersonal Sensitivity (r=.499) subscales of BSI.

The second and third sub-question of the research were expressed as “Is there any statistical difference between internet addiction and duration of daily internet usage?” and “Is there any statistical difference between psychological symptoms and duration of daily internet usage?”

Table 2. Comparing student’s duration of Internet usage with BSI scores and IAS scores

<table>
<thead>
<tr>
<th>Internet Usage Duration</th>
<th>n</th>
<th>r</th>
<th>sd</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No daily usage</td>
<td>22</td>
<td>22.63</td>
<td>17.36</td>
<td>4</td>
<td>3.902</td>
<td>.005*</td>
</tr>
<tr>
<td>1-3 hours</td>
<td>46</td>
<td>19.47</td>
<td>16.63</td>
<td>121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5 hours</td>
<td>31</td>
<td>27.09</td>
<td>16.10</td>
<td></td>
<td>1.449</td>
<td>.222</td>
</tr>
<tr>
<td>6-8 hours</td>
<td>17</td>
<td>25.35</td>
<td>16.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 hours and above</td>
<td>10</td>
<td>42.30</td>
<td>23.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>24.50</td>
<td>17.99</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSI Somatization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No daily usage</td>
<td>22</td>
<td>1.65</td>
<td>.75</td>
<td>4</td>
<td>1.449</td>
<td>.222</td>
</tr>
<tr>
<td>1-3 hours</td>
<td>46</td>
<td>1.68</td>
<td>.75</td>
<td>121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5 hours</td>
<td>31</td>
<td>1.72</td>
<td>.65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-8 hours</td>
<td>17</td>
<td>1.49</td>
<td>.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 hours and above</td>
<td>10</td>
<td>2.18</td>
<td>.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>1.70</td>
<td>.74</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSI Obsessive-Compulsive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No daily usage</td>
<td>22</td>
<td>2.06</td>
<td>.80</td>
<td>4</td>
<td>2.093</td>
<td>.086</td>
</tr>
<tr>
<td>1-3 hours</td>
<td>46</td>
<td>1.85</td>
<td>.85</td>
<td>121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5 hours</td>
<td>31</td>
<td>1.97</td>
<td>.65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-8 hours</td>
<td>17</td>
<td>1.71</td>
<td>.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 hours and above</td>
<td>10</td>
<td>2.51</td>
<td>.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>1.95</td>
<td>.77</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSI Interpersonal Sensitivity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No daily usage</td>
<td>22</td>
<td>1.57</td>
<td>.50</td>
<td>4</td>
<td>1.106</td>
<td>.357</td>
</tr>
<tr>
<td>1-3 hours</td>
<td>46</td>
<td>1.62</td>
<td>.88</td>
<td>121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5 hours</td>
<td>31</td>
<td>1.73</td>
<td>.69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-8 hours</td>
<td>17</td>
<td>1.67</td>
<td>.68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 hours and above</td>
<td>10</td>
<td>2.15</td>
<td>1.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>1.69</td>
<td>.77</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BSI Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No daily usage</td>
<td>22</td>
<td>1.68</td>
<td>.79</td>
<td>4</td>
<td>2.347</td>
<td>.058</td>
</tr>
<tr>
<td>1-3 hours</td>
<td>46</td>
<td>1.63</td>
<td>.83</td>
<td>121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5 hours</td>
<td>31</td>
<td>1.82</td>
<td>.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-8 hours</td>
<td>17</td>
<td>1.60</td>
<td>.63</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results showed that there was statistically significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=22.63 \pm 17.36$), 1-3 hours ($\bar{x}=19.47 \pm 16.63$), 4-5 hours ($\bar{x}=27.09 \pm 16.10$), 6-8 hours ($\bar{x}=25.35 \pm 16.83$), 8 hours and above ($\bar{x}=42.30 \pm 23.00$) and Internet Addiction Scale score ($p=.005$).

There was statistically significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=2.03 \pm .97$), 1-3 hours ($\bar{x}=1.67 \pm .77$), 4-5 hours ($\bar{x}=1.78 \pm .77$), 6-8 hours ($\bar{x}=2.02 \pm 1.06$), 8 hours and above ($\bar{x}=2.60 \pm 1.19$) and BSI Hostility subscale score ($p=.039$).

There was no significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=1.65 \pm .75$), 1-3 hours ($\bar{x}=1.68 \pm .75$), 4-5 hours ($\bar{x}=1.72 \pm .65$), 6-8 hours ($\bar{x}=1.49 \pm .70$), 8 hours and above ($\bar{x}=2.18 \pm .89$) and BSI Somatization subscale score ($p=.222$). There was no significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=2.06 \pm .80$), 1-3 hours ($\bar{x}=1.85 \pm .85$), 4-5 hours ($\bar{x}=1.97 \pm .65$), 6-8 hours ($\bar{x}=1.71 \pm .56$), 8 hours and above ($\bar{x}=2.51 \pm .88$) and BSI Obsessive-Compulsive subscale score ($p=.086$). There was no significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=1.57 \pm .50$), 1-3 hours ($\bar{x}=1.62 \pm .88$), 4-5 hours ($\bar{x}=1.73 \pm .69$), 6-8 hours ($\bar{x}=1.67 \pm .68$), 8 hours and above ($\bar{x}=2.15 \pm 1.03$) and BSI Interpersonal Sensitivity subscale score ($p=.357$). There was no significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=1.68 \pm .79$), 1-3 hours ($\bar{x}=1.63 \pm .83$), 4-5 hours ($\bar{x}=1.82 \pm .71$), 6-8 hours ($\bar{x}=1.60 \pm .71$) and BSI Psychoticism subscale score ($p=.831$).
.63, 8 hours and above ($\bar{x}=2.46 \pm 1.26$) and BSI Depression subscale score ($p=.058$). There was no significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=1.61 \pm .70$), 1-3 hours ($\bar{x}=1.56 \pm .81$), 4-5 hours ($\bar{x}=1.55 \pm .50$), 6-8 hours ($\bar{x}=1.54 \pm .63$), 8 hours and above ($\bar{x}=2.06 \pm .85$) and BSI Anxiety subscale score ($p=.331$). There was no significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=1.40 \pm .62$), 1-3 hours ($\bar{x}=1.42 \pm .67$), 4-5 hours ($\bar{x}=1.30 \pm .37$), 6-8 hours ($\bar{x}=1.47 \pm .61$), 8 hours and above ($\bar{x}=1.72 \pm .58$) and BSI Phobic Anxiety subscale score ($p=.432$). There was no significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=1.87 \pm .72$), 1-3 hours ($\bar{x}=1.78 \pm .83$), 4-5 hours ($\bar{x}=1.84 \pm .87$), 6-8 hours ($\bar{x}=1.61 \pm .68$), 8 hours and above ($\bar{x}=2.48 \pm .98$) and BSI Paranoid Ideation subscale score ($p=.113$). There was no significant difference to the internet usage duration during a day to the no daily usage ($\bar{x}=1.60 \pm .76$), 1-3 hours ($\bar{x}=1.58 \pm .69$), 4-5 hours ($\bar{x}=1.43 \pm .46$), 6-8 hours ($\bar{x}=1.50 \pm .71$), 8 hours and above ($\bar{x}=2.06 \pm .86$) and BSI Psychoticism subscale score ($p=.158$).

DISCUSSION

In this study the main aim is to reveal the relationship between internet addiction and psychological symptoms in a group of university students who have personal computers. The analysis showed that somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism related with internet addiction.

According to Balci and Gülner’s research 23.2 % of the university students participating in the study are internet addicts and 28.4% are risky internet users. In other words a very important part of a 51.6 % of the students can be characterized as “problematic internet users”. The results has been shown that internet addicts clearly spent more time online and felt more confidence to the internet (Balci, Gülner, 2009). The study average of South Korean students spending 23 hours during a week for gaming and another 1.2 million are probably believed to be at risk for addiction. Therapists worry about the increasing number of student’s low school success, dropping out from school to spend time on computers. Internet addiction is resistant to treatment and high relapse risks regrettably (Block, 2008). In this study it was determined that most of the students used 1-3 hours internet during a day. So it is a cause of personal, familial and social problems and shows us probably most of university students to be at risk for internet addiction.

Kelleci et al. studied the relationship between gender, psychiatric symptoms and internet usage duration and findings show that there was statistically significant correlation between internet usage duration and psychiatric symptoms (Kelleci et al., 2009). Also in this study, the results support the Kelleci et al.’s findings.

In addition to these, Koç’s findings showed that the student who use six hours internet report that more psychiatric syptoms such as depression, obsession, compulsion, interpersonal sensitivity, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism (Koç, 2011). Also in this study, statistically meaningful correlation was found between internet usage and psychological symptoms as a somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism.

CONCLUSION AND SUGGESTIONS

The present study indicates that internet addiction tendency is related with psychological symptoms such as somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism among university students. Also denote that the students daily internet usage affect the internet addiction tendency and psychological symptoms of hostility.
In this study, it was focused on the university students that use their personal computer, internet addiction and psychological symptoms. As related with findings enables us to aware of the effects of internet usage on internet addiction tendency and psychological symptoms. It should be given importance to the education of students about internet usage habits and psychologists must be aware of this newly emerging disorder as internet addiction and they should be able to apply the appropriate therapeutic interventions were suggested.

Only adolescents who attend university with higher socio-economic status and education participated to the study. Low socio-economic status, low education may be other factors related with internet usage and psychological symptoms, a sample having wide range of these characteristics should be formed. Having a large sample of students with different backgrounds may enable to generalize the results to the community.

REFERENCES

THE EFFECT OF COMPUTER-ASSISTED INSTRUCTION ON THE ACHIEVEMENT AND ATTITUDES TOWARDS MATHEMATICS OF STUDENTS IN MATHEMATICS EDUCATION

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ABSTRACT
In this contemporary era, individuals should have great deal of skills with improvements since science and technology take progress rapidly. In this context, different learning methods should be used in schools. One of this methods is “Computer Assisted Instruction” based on the constructivist learning theory. The objective of this study was to investigate the impact of computer-assisted instruction method on students' achievement and attitudes towards mathematics in secondary mathematics education. The research was designed based on an experimental pre-test post-test model. The research was conducted in 60 ninth grade students from an anatolian high-school during 2009-2010 academic year. The experiment group consists of 30 students and the control group consists of 30 students. The research is implemented by using computer-assisted teaching material that is developed by Flash MX program related with the unit of “Relation, Function and Operation” of the area of learning algebra and took 10 weeks. Computer–assisted instruction and traditional instruction methods were used in the experiment group and the control group respectively. The data were collected by using the Mathematics Test, Mathematics Attitudes Scale. Our results demonstrated that teaching mathematics with a computer assisted instruction method increased student success significantly in mathematics lesson. However, the experimental and control groups did not differ between students’ attitudes towards mathematics.

Keywords: computer-assisted instruction, mathematics achievement, attitude towards mathematics.

INTRODUCTION
If the traditional methods are thought to be insufficient in educating an individual who is supposed to have the contemporary skills, one of the most effective ways is taking advantage of instruction technologies, especially the computers (Altun, Uysal and Ünal, 1999; Yiğit and Akdeniz, 2000). Particularly, reasons like the unproportional change of the students and the teachers’ numbers, complexification of content due to the data quantity, some applications’ importance that show the individual differences direct people to benefit from the computers in education ( Alkan, 1998; Uşun, 2000).

There is a clear relationship between the Mathematics and the computer. In fact, this is a symbiotic one. Without Mathematics the computers even exist. But, the existence and process of computer has developed the Mathematics and it has helped us to soar the activation and Mathematics on the paper (Tooke, 2001).

The computer is considered as a basic element in every area that is talked about reforms in teaching Mathematics. The new secondary mathematics education also gives an important place to the computers. In this education, it is emphasized that cognitive tools, which the mathematical notions in teaching-learning mathematics on computers are based on, have an effective position in gaining problem solving and thinking skills due to the softwares (The Ministry of Education [MEB], 2005). But, reflection into education is not as fast as developments in information technologies. It is necessary to present the interactive materials to the students with suitable softwares and activities. Mathematics has been seen as a difficult lesson to understand, apart from the daily life, boring and even ominous. In this situation, it is very important that computers should be used with exploring materials and guidance of teacher as a learning platform.
On the field base, relation and function is one of the most difficult learned topics (Sierpinska, 1992; Mayes, 2001; Albayrak, 2003; Ural, 2006; Elia, Panaoura, Eracleaus & Gagatsis, 2007; Aydın ve Köğce, 2008). Secondary mathematics lesson is composed of 5 sub-learning field in learning algebra of the 9th grade instruction schedule (MEB, 2005); “Relation, Function and Operation” unit cartesian product, relation, function, operation and operations in functions. There are 14 educational attainments in the schedule about this part and this part composes 28% of total lessons of the 9th grade mathematics.

Instruction should be planned through activities that let the students reveal their foreknowledge, remove notion delusions if there is any, make sense and relate to other notions instead of memorizing (Feyzioğlu, 2006). Relation, function and operation subject is composed of abstract notions and has a rowed structure, so using learner centered material, that embodies these notions, relates them effectively and gives feedback immediately, provides a more beneficial lesson.

The rowed structure of mathematics shows itself in teaching relation and function notions. Because, here, each notion is structured on an other one. So, this study includes from ordered pair Notion to cartesian product, relation and function and operations in functions.

This study intends to research the computer–assisted instruction’s effect on success and mathematics which is used depending on computer–assisted material that is developed with relation, function and operation topics.

Objectives of Study

The aim of the study is to develop computer–assisted material related to relation, function and operation topics in the 9th grade mathematics instruction schedule and research the effects of computer–assisted instruction methods on success and attitudes of students.

METHODOLOGY

This study is composed of two parts. In the first part, computer software material is developed, in the second part this developed material’s effectiveness is searched by comparing in computer-assisted learning platform.

While comparing, Campbell and Stanley’s (1963) it benefits from experiment group that is classified with pre-test/post-test control group. Before the application the students were seperated objectively into 2 groups; control group and experiment group. First, the prepared scales were applicated as a pre-test on both groups. All the students were applicated with Mathematics Attitudes Scale and Mathematics Achievement Test as a pre-test. In the process, the control group was applicated with “Traditional Instruction Method”, the experiment group was applicated with “Computer–Assisted Instruction”. In the end, pre-tests were given as post-tests and the effects of both methods’ on students attitudes and achievements.

Computer-Assisted Software Material

The material is designed according to Willis’s (1994) Educational Process Period Model. So, educational software is composed through planning, process, evaluation and correction stages.

While preparing the content schema, all attainments were investigated that are related to relation, function and operation topics in mathematics educational schedule. The levels were decided, their order and introduction conditions were organized according to secondary mathematics schedule.
When organizing the topics levels, mathematics books were investigated according to the students’ delusions about relation, function and operation.

The basic notions are listed.

Those notions’ definitions on the books were investigated and the best ones were chosen.

By relating those notions, their order was planned.

The education software is prepared with the name of Interactive Mathematics. The activities were developed and transferred into the computer, and then all the activities were dubbed in a studio. Those dubbed passages were set up on the activities with animations to be synchronized. The users can stop the animations whenever they want and play again. Animations, exercises and evaluation tests can be repeated and listened. The users can get both visual and audial feedbacks for all questions under “What did we learn?” title, even true or false. They can evaluate themselves by seeing their true or false answers with percentages and frequency under each “What did we learn?” title.

In Interactive Mathematics Instructor Package, at the end of each learning part, there is a test with its directions. After each mark a feedback is given but you can not go back before you finish the test, you should go on with the next question. When the test is finished there is a feedback about which questions are true/false, how many points you get and according to the points repetition or congratulation.

Population and Sample

The population of the study is the 9th grade students in Karabağlar in İzmir. The research was carried out with 60 9th grade students from an anatolian high school in Karabağlar in İzmir, in 2009-2010 Education year.

Data Gathering Tools

In this research, Mathematics Attitudes Scale and Mathematics Achievement Tests were used as data gathering tool. To be able to develop the scales and applicant at schools, the necessary permissions were taken from İzmir National Education Directorate.

Mathematics Achievement Test

Secondary school 9-12th grades attainments in mathematics schedule were investigated, according to these attainments 59 questions were prepared. This developed achievement test was applied on 352 9th grade students in fall term in 2009-2010 education year at determinated schools. At the end, item analysis was done with Finesse programme. In this analysis, Kuder-Richardson 20 (KR-20) reliability co-efficient was found as 0,84. 8 questions were canceled because of their distinction index was less than 0,19, and 11 questions were canceled because their distinction index was between 0,20-0,29. also, the items were investigated according to their difficulty and being marked frequency. Finally, the achievement test had 40 questions by canceling 19 questions. The mathematics test was developed and after 2 months it was applied 68 9th grade students, KR-20 reliability co-efficient was 0,86. This result shows that the test is reliable.

Mathematics Attitude Scale

In this research “Mathematics Attitude Scale” was used, developed by Nazlı Çiček and Erktin (2002). In this attitude scale, there are 20 items that have positive and negative provisions about “Benefits of mathematics”, “Perceived Mathematics Achievement Level” and “Interests in mathematics”. All items have 5 choices and these choices are scaled from “never” to “always”. Also, to prevent a routine answering, 8 items have negative sentences and the others have positive sentences. For grading, the negatives were reversed. Before used in the research, the attitude scale was applied on 211 students in İzmir, 125 9th grade and 86 10th grade students. Finally, in all scale Cronbach alpha reliability co-
efficient was 0.91; “Benefits of mathematics” was 0.77; “Perceived Mathematics Achievement Level” was 0.87; “Interests toward mathematics lessons” was 0.84.

Data Analysis

Some data was analyzed with Finesse, some data was analyzed with SPSS 13.0 package. In analysis period, frequency, percentage, standart deviation value; in paired comparisons unconnected examples, t tests were used. Control and experiment groups’ differences between groups according to variables were tested p<0.05 significance level. After the analysis, some charts were given and each data was commented separately.

FINDINGS

These results were found from obtained data.

Table 1. The results of control and experiment groups’ pre-test points of mathematics achievement test

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>X</th>
<th>sd</th>
<th>cd</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>30</td>
<td>2,100</td>
<td>1,729</td>
<td>58</td>
<td>1.320</td>
<td>0.192</td>
</tr>
<tr>
<td>Control</td>
<td>30</td>
<td>1,566</td>
<td>1,381</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As we see in Table 1, there isn’t a clear difference between the control and experiment groups’ Mathematics Achievement Test pre-test points statistically (t=1.320; p>0.05). In experiment group students’ Mathematics Achievement Test pre-test average is X = 2,100; in control group students’ average is X = 1,566. There isn’t any difference between the groups before the test. According to this fact, it can be said that before the application the control end experiment group students are similar to each other about the topic.

The students, who were educated with Computer-assisted instruction and traditional educational methods in “Relation, function and operation” learning platform, were investigated if their post-test mathematics achievement test points were different. The facts of the control and experiment groups’ post-test achievement points are shown in Table-2.

Table 2. The results of control and experiment groups’ post-test points of mathematics achievement test

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>X</th>
<th>sd</th>
<th>cd</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>30</td>
<td>20,766</td>
<td>4,553</td>
<td>58</td>
<td>5.105</td>
<td>0.000*</td>
</tr>
<tr>
<td>Control</td>
<td>30</td>
<td>14,466</td>
<td>4,994</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P<0.05

As we see in Table 2, between the control and experiment groups’ students’ mathematics achievement test post-test points are statistically different (t=5.105; p<0.05). In the experiment group’s students’ achievements (X = 20,766) are higher than the control group’s students (X = 14,466). This difference is on behalf of the experiment group. This fact shows that the Computer-assisted instruction method and traditional education methods have a clear different effect on the students’ mathematics achievements. This result leads that experiment group’s students with computer-assisted instruction methods increase their achievement level and show a higher performance more than the control group students.

The students’ attitudes towards mathematics were investigated before and after the application about “Relation, function and operation” learning in control groups which had the traditional education methods and the experiment group which had computer-assisted instruction.
Table 3. The results of control and experiment groups’ students’ pre-test points of mathematics attitudes

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Groups</th>
<th>N</th>
<th>X</th>
<th>sd</th>
<th>cd</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits of Mathematics</td>
<td>Experiment</td>
<td>30</td>
<td>20,933</td>
<td>4,378</td>
<td>58</td>
<td>-0,879</td>
<td>0,383</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>21,800</td>
<td>3,166</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Mathematics Achievement Level</td>
<td>Experiment</td>
<td>30</td>
<td>21,666</td>
<td>4,685</td>
<td>58</td>
<td>0,336</td>
<td>0,738</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>21,266</td>
<td>4,540</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interests toward math lessons</td>
<td>Experiment</td>
<td>30</td>
<td>31,633</td>
<td>6,094</td>
<td>58</td>
<td>0,233</td>
<td>0,816</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>31,233</td>
<td>7,137</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>Experiment</td>
<td>30</td>
<td>74,233</td>
<td>12,981</td>
<td>58</td>
<td>-0,020</td>
<td>0,984</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>74,300</td>
<td>12,911</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When we look at Table 3, it can be seen that there aren’t any significant differences statistically between the control and experiment groups’ attitudes towards mathematics pre-test points in the general scale and “Benefits of mathematics” \( t=-0,879; p>0,05 \), “Perceived Mathematics Achievement Level” \( t=0,336; p>0,05 \), and “Interests toward mathematics lessons” \( t=0,233; p>0,05 \) sub-traits. It can be seen that in the general scale and all sub-dimensions, both the control and experiment groups’ students’ points are close to each other. This fact shows that before the application the students’ attitudes of mathematics in the control and experiment groups are similar.

In mathematics lesson, it was investigated that if the students’, who were applicated with traditional instruction methods or computer-assisted instruction in learning “Relation, function and operation”, attitudes of mathematics post test results’ differences are clear or not. So, the control and experiment groups’ attitudes of mathematics post-test results are compared with t test. The results are on Table-4.

Table 4. The results of control and experiment groups’ students’ post-test points of mathematics attitudes

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Groups</th>
<th>N</th>
<th>X</th>
<th>sd</th>
<th>cd</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits of Mathematics</td>
<td>Experiment</td>
<td>30</td>
<td>21,233</td>
<td>3,490</td>
<td>58</td>
<td>0,346</td>
<td>0,730</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>20,933</td>
<td>3,215</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Mathematics</td>
<td>Experiment</td>
<td>30</td>
<td>21,800</td>
<td>4,254</td>
<td>58</td>
<td>0,030</td>
<td>0,976</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>30</td>
<td>21,233</td>
<td>3,215</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
According to the Table 4, there aren’t any clear differences statistically in general scales (t=0,499; p>0,05) and “Benefits of mathematics” (t=0,346; p>0,05), “Perceived Mathematics Achievement Level” (t=0,030; p>0,05) and “Interests toward mathematics lessons” (t=0,763; p>0,05) sub-dimensions between the control and experiment groups’ students’ attitudes of mathematics post-test points. But, at the end of the application, in all dimensions and general scale the experiment group students’ attitudes of mathematics (X=76,433) are more positive than the control group students’ (X=74,833).

RESULT AND DISCUSSION

A significant difference was found at the end of the application on behalf of the experiment group between the mathematics achievements of the control group who had traditional instruction methods and the experiment group who had computer-assisted instruction. But, a significant difference was not found between their attitudes of mathematics.

This situation shows that, computer-assisted instruction method is more effective on the students’ mathematics achievements than the traditional instruction methods, but it is not effective on their attitudes of mathematics.

In books and articles, we can see a lot of researches that compare achievements of groups who are applicated the traditional instruction or the computer-assisted instruction method on different fields. In most of the researches there were found significant differences about achievements on behalf of the computer-assisted instruction applied group (Akinsola & Animasahun, 2007; Budak, 2000; Gürbüz, 2007; Özmen, 2008; Tienken & Wilson, 2007).

On the other hand, in some researches, there weren’t found any differences about achievements between the computer-assisted instruction applicated group or the traditional instruction applied group (Alacapınar, 2003; Rosales, 2005; Tienken ve Maher, 2008).

When the books and the articles are investigated, we can see a lot of different studies from primary school to university about the computer-assisted instruction and attitudes towards the lesson. If these studies results are evaluated, it can be found that in one group the computer-assisted instruction materials provide positives attitudes towards the lesson (Aççay and other., 2003; Aktümen and Kaçar, 2008; Kutluca, 2009); and in another group the computer-assisted instruction materials do not provide any or provide (Kulik & Kulik, 1987; Ganguli, 1990; Buran, 2005; Klein, 2005; Sarıçayır, 2007); a little (Çepni and other., 2006) positive effects on the attitudes.

When we look at the studies generally, at primary schools the students’ attitudes have been changed but at secondary school or university, in other words, the higher instruction level, the attitudes have
not been changed much. Hence, Baykul (1990) investigated the students’ attitudes’ changes towards mathematics and science lessons from the 5th grades and all the seniors at high schools. In this research, it was seen that the students’ attitudes towards mathematics and science lessons are changing in a negative way through the 5th grades and the seniors, in the last years of their schools. It can be said that the more they have experiences with mathematics and science lessons, the more they feel negative attitudes towards the lessons. The literature supports this study because the students are in secondary level.

From the point of the computer-assisted instruction method’s effect on the students’ mathematics achievements, in education platform the materials which are well-designed and appeal to their sense organs will increase their interests and so the lessons can be taught more effectively. In this sense, in education platforms, especially in the subjects like algebra which the students can face in abstract and upper learning levels, should be enriched with computer-assisted materials that use animations and simulations.

REFERENCES


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